THE PRODUCTION AND MANAGEMENT JOURNAL OF THE NORTH AMERICAN PULP AND PAPER INDUSTRY

PULP & PAPER

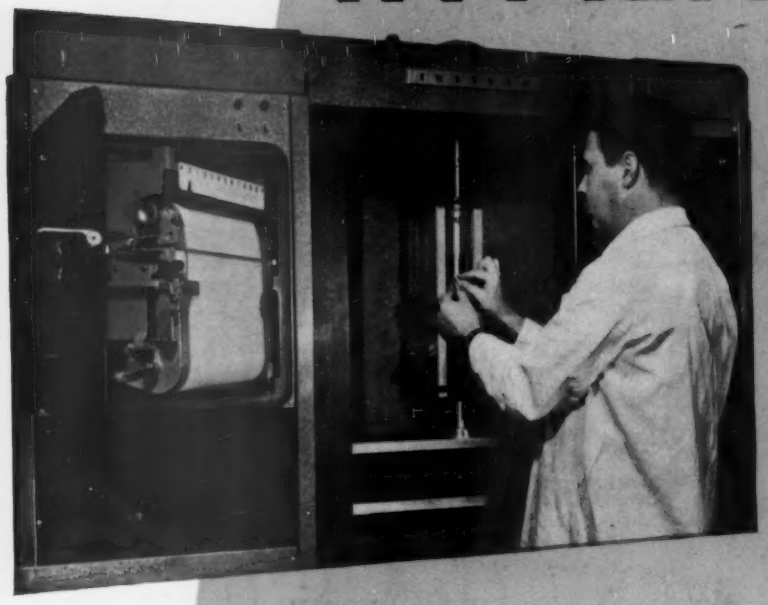
SEPTEMBER 1951
Vol. 25 No. 10

"The Cellulose Age"

KETCHIKAN, ALASKA—JUST TO NORTH OF HERE WILL BE NEW MILL
Tongass Narrows is in foreground. Note timberline on mountains. Smoke comes from spruce lumber mill. Pulp mill off to left.

NOW... High Wet-Strength with

KYMENE



Kymene 138, formerly called Resin 138, and Kymene 234 are firmly established as superior low-cost wet-strength resins for use in all types of wet-strength papers and paperboard—both in the stock system and for surface applications.

These strongly cationic resins are in solution, ready to use. They may be diluted with water to any desired concentration. No acid additions or aging periods are needed before using. Alum is not required.

The effectiveness of Kymenes is demonstrated at Hercules' laboratories by the Instron, shown above. This highly sensitive equipment measures wet and dry tensile strength, and other important properties of wet-strength papers.

Write for technical data and sample.

HERCULES POWDER COMPANY

Paper Makers Chemical Dept., 965 King Street, Wilmington, Delaware

SIZING MATERIALS AND CHEMICALS FOR PAPER

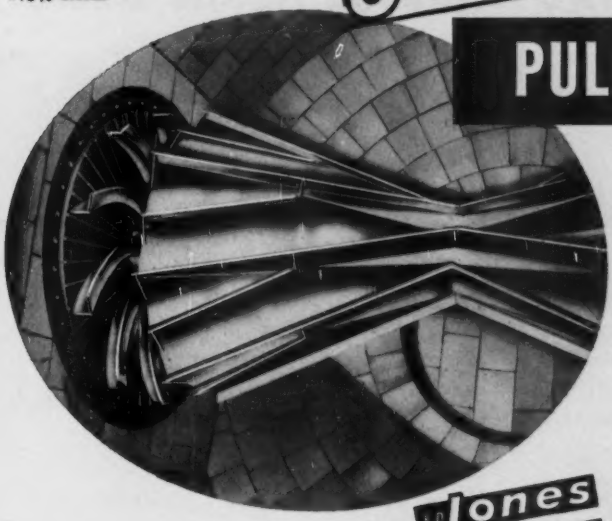
"KYMENE" IS A HERCULES TRADEMARK

PP51-6

Rotor of No. 4 size Jones Pulp-Master, shown in tile tank installation in a leading midwestern mill. Capacity 4000 lbs. 6½% stock.

E.D. Jones

PULPING POWER



The rugged, one-piece fabricated rotor of the PULP-MASTER, placed well above the bottom of the tank, gives stock vigorous, continuous circulation — yet allows junk metal to drop to the tank bottom.

Its vanes force the stock outward, where the impellers rub and refine it against the fixed refining discs. Baled pulp, waste paper, machine broke — even glassine and wet strength — is completely disintegrated in 10 to 40 minutes.

Over 140 sold to date. Ask your Jones representative for details — or write for Bulletin 1019-B.

E.D. Jones **PULP-MASTER**

E. D. JONES and SONS COMPANY • PITTSFIELD, MASSACHUSETTS

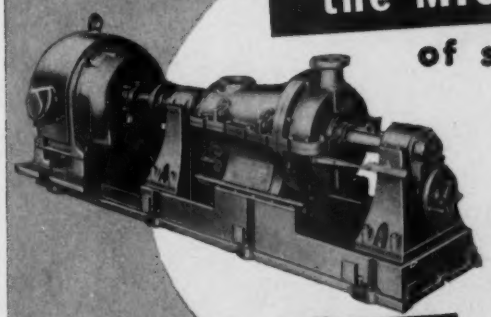
BUILDERS OF QUALITY STOCK PREPARATION MACHINERY

E.D. Jones

Still

"the MIGHTY MITE"

of stock preparation



In mill after mill, the Jones High-Speed Refiner is being used as a highly versatile general utility unit . . . refining stock for high-quality ledger paper; defibering over-issue news; clearing flakes from coated book broke.

And in case after case, the report comes back: "improved stock—better control—drastic reduction in operating horsepower requirements — lowered maintenance costs."

This explains why over 900 units have been sold (not counting those by imitators!) since its introduction. Your Jones representative will tell you more about it — or write for Bulletin 1011-B.

E.D. Jones **HIGH-SPEED REFINER**

E. D. JONES and SONS COMPANY • PITTSFIELD, MASSACHUSETTS

BUILDERS OF QUALITY STOCK PREPARATION MACHINERY

PULP & PAPER, September, 1951. Vol. 25, No. 10. Published monthly, except June, when publication is semi-monthly, at 815 Witmer St., Los Angeles 17, California, by Miller Freeman Publications. Executive, Advertising and Editorial Offices, 71 Columbia St., Seattle 4, Washington. Annual subscription $3.00 per year in U. S. and Canada; $4.00 for other countries. Entered as second class matter at the post office, Los Angeles, California, under Act of March 3, 1879. Postmaster: Please send Notice 3579 to PULP & PAPER, 71 Columbia St., Seattle 4, Washington.

Another Mason-Neilan Basic

In 1944 — The C_v Concept — Universally Used Today

NOW! Point 4 Factor Trim

A thorough study of reduced capacity trim over the past decade has resulted in a new concept of the entire subject, leading to conclusions which are sound from both engineering and manufacturing standpoints and which simplify the problem for the user. Mason-Neilan now offers *Point 4 Factor Trim* based on the following general principles:

1. Since a properly designed wide range control valve will control satisfactorily near its stroke limits, a vast majority of flow problems can be handled by valves with full capacity trim. Therefore, unless the required reduction in capacity is appreciable, no advantage is obtained by the use of reduced capacity trim.

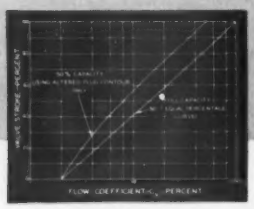
2. The only practical reduced capacity trim design is one which *extends the minimum* controllable flow as well as *reducing the maximum*. A simple analysis shows that to extend the minimum controllable flow it is *necessary to reduce the seat ring diameter.*

3. *Only one reduction* is practical for a given size top-and-bottom guided, double or single seated control valve. The optimum reduction consistent with retention of mechanical strength is approximately 60% of full capacity; hence the capacity of a valve with reduced capacity trim should be .4 of full capacity. The logical description of this trim is therefore —

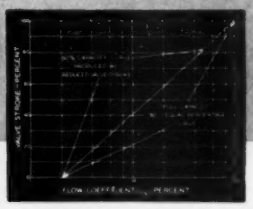
Point 4 Factor Trim

There are a number of valid reasons for specifying reduced capacity trim in control valves for industrial processes. Masoneilan *Point 4 Factor Trim* provides standardization, plus convenience in selection and procurement in handling these unusual applications.

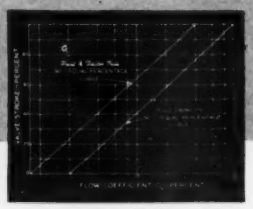
Complete details are available on request.



Effect of reducing *maximum* flow by altering plug contours only.

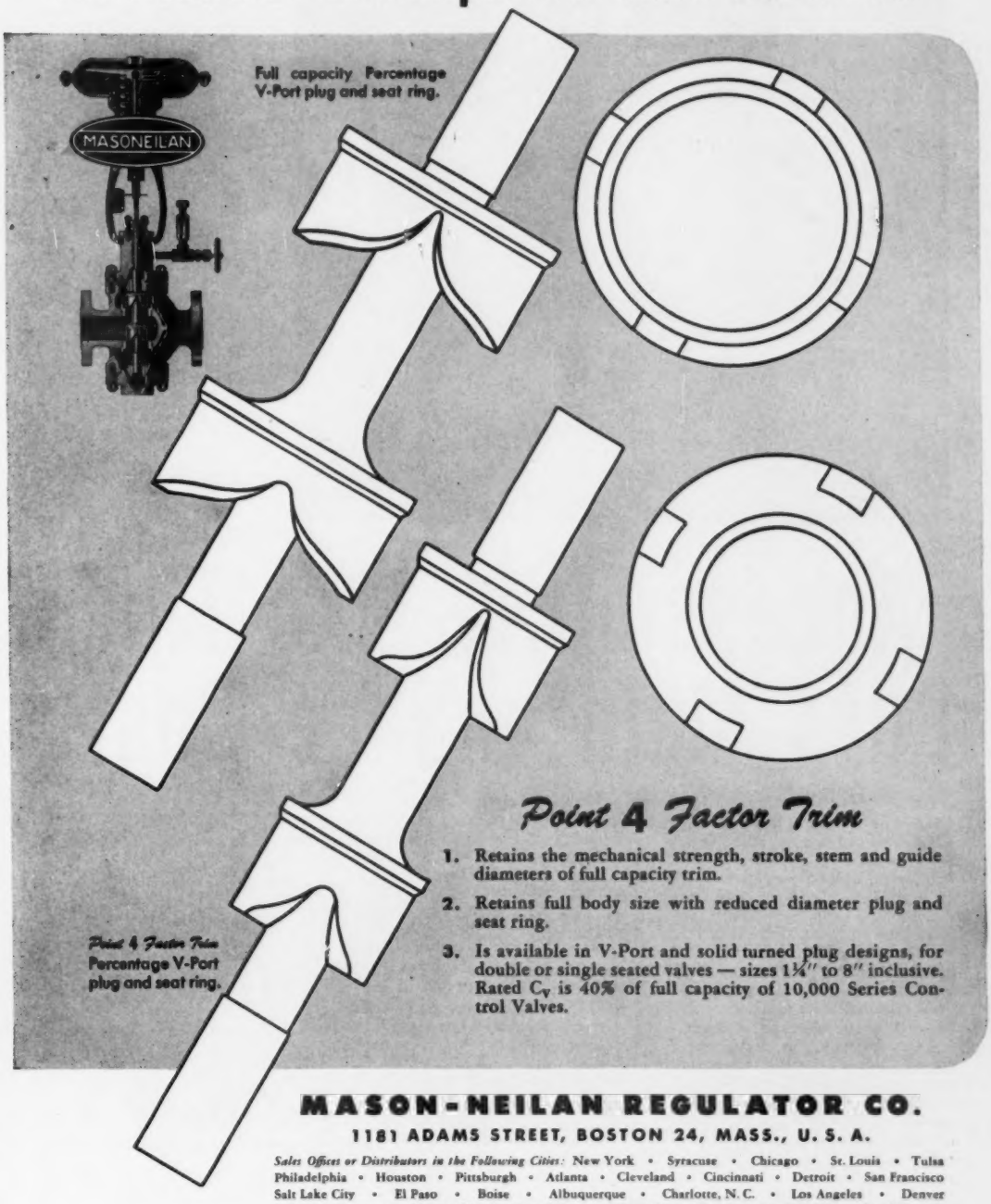


Note that same reduction of *maximum* flow can be obtained by reducing stroke by means of positioner adjustment or altered spring characteristic.



Effect of *Point 4 Factor Trim* obtained by using reduced plug and seat ring diameters.

Contribution to Simplified Valve Selection



Point 4 Factor Trim

1. Retains the mechanical strength, stroke, stem and guide diameters of full capacity trim.
2. Retains full body size with reduced diameter plug and seat ring.
3. Is available in V-Port and solid turned plug designs, for double or single seated valves — sizes 1¼" to 8" inclusive. Rated C_V is 40% of full capacity of 10,000 Series Control Valves.

MASON-NEILAN REGULATOR CO.

1181 ADAMS STREET, BOSTON 24, MASS., U. S. A.

Sales Offices or Distributors in the Following Cities: New York • Syracuse • Chicago • St. Louis • Tulsa Philadelphia • Houston • Pittsburgh • Atlanta • Cleveland • Cincinnati • Detroit • San Francisco Salt Lake City • El Paso • Boise • Albuquerque • Charlotte, N. C. • Los Angeles • Denver Appleton, Wisconsin • Corpus Christi • New Orleans Mason-Neilan Regulator Co., Ltd., Montreal and Toronto

Accessibility Like This Cuts Maintenance Costs

SEE HOW EASY IT IS to work on the packing and clear water seal of this Allis-Chalmers Type PW Paper Stock Pump. And notice that the casing bolts are in slots instead of holes. This makes it possible to remove the rotating element in five minutes and replace it in the same quick time. Neither suction nor discharge piping need be disturbed. Thus maintenance is easy and fast, maintenance costs are low.

Heavy construction designed especially to withstand the loads imposed by pumping heavy stock and special materials to suit the characteristics of the stock being pumped keep the necessity for maintenance down. Many parts are interchangeable on several sizes of pumps so spare parts inventory is low regardless of the number of pumps you operate.

FREE ENGINEERING HELP

Allis-Chalmers pump representatives are thoroughly familiar with all types of paper making processes. One of these competent application engineers will be glad to help you with your pumping problems — or with your problems involving any other of the many paper making processes for which Allis-Chalmers manufactures equipment. Call your nearby Allis-Chalmers District Office, or write Allis-Chalmers, Milwaukee 1, Wisconsin. Ask for bulletins 08B7112 and 08B6725. A-3406

MOTORS

STREAMBARKER

TEXROPE V-BELT DRIVES

VIBRATING SCREENS

HI-DENSITY FEEDER

ROTARY KILNS

AND OTHER EQUIPMENT FOR PAPER MAKING . . .

Hi-Density, Texrope and Streambarker are Allis-Chalmers trademarks.

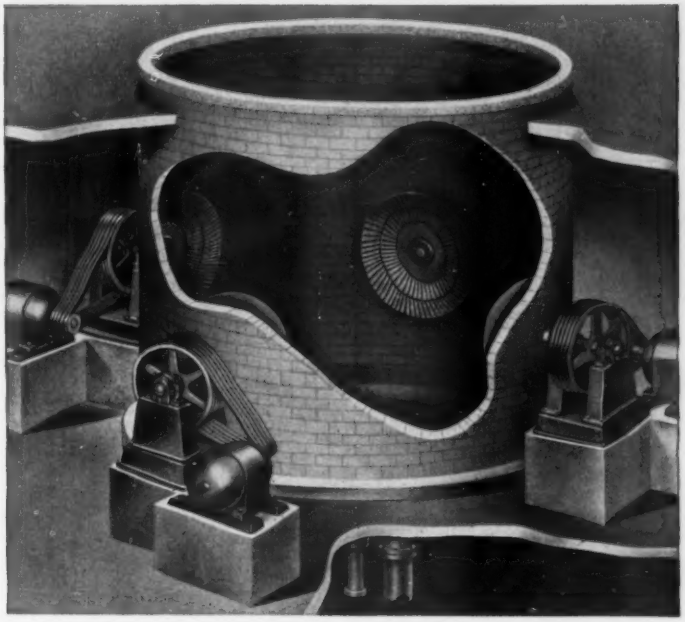
ALLIS-CHALMERS

The Rice Barton QuatroPulper

. . . a high production machine . . . ideal for disintegrating pulp, broke or waste paper

Other DynoMachines:

- The **QuatroPulper** is designed for processing stock in large capacities . . . either batch or continuous operation.
- The **DynoChest** is primarily for disintegrating stock in slush form . . . batch operation.
- The **DynoFiner** is for performing the same operation on a continuous basis.



THE stock is charged all at one time into the top of the vat. Four DynoPellers (described below) subject it to the vigorous dynomizing action that completely separates each fibre from its neighbor, maintaining its original length. The simple operating principle and design of the QuatroPulper eliminates the "wracking" and grief of other types of pulpers. Because there are few moving parts there is no loss of production time due to repair or adjustment. The QuatroPulper defibers the stock at low cost and produces a high quality slurry quickly and effectively.

Let us tell you how the QuatroPulper can save YOU *money in processing* YOUR *particular stock. Write today.*

The DynoPeller ·····›
is the heart of all DynoMachines. Its concave face is lined with rough, hard carbide particles. As the DynoPeller rotates it causes a suction at its center that pulls the stock towards it. Centrifugal force then causes the stock to flow rapidly over the rough carbide particles. This effective dynomizing action completely disintegrates the stock . . . separating each fibre from its neighbor while maintaining its original length.

RBR2

RICE BARTON Research Corporation
WORCESTER 1, MASS.

One of two 90' dia. Dorrco Hydro-Treators which treat 25 MGD of process water for a large pulp mill.

Pulp mill water supply problems solved!

with DORRCO HYDRO TREATORS*

As every pulp man knows, a constant supply of clear process water is a key ingredient in the production cycle. Here's the kind of results that four Pulp Mills ** are currently getting from Dorrco Hydro-Treators. We believe they speak for themselves.

	PLANT A	PLANT B	PLANT C	PLANT D
OPERATION	COLOR REMOVAL	COAGULATION	COLOR REMOVAL	TURBIDITY REMOVAL
NO. AND SIZE OF UNITS	2–80' DIA.	1–75' DIA.	2–100 DIA.	2–90' DIA.
CAP. PER UNIT-MGD	10.0	6.5	10.0	12.6
AVG. EFF. PPM	3–5 (TURB)	3 (TURB)	10 (COLOR)	TRACE
SLUDGE % SOLIDS	– – –	21.6	– – –	– – –

If you are investigating high-rate, up-flow type units for your process water supply, get *all* the facts before deciding. A new 32 page bulletin in color, #9041, describes the Hydro-Treator in detail. For your free copy write to The Dorr Company, Stamford, Conn., or in Canada to The Dorr Company, 80 Richmond Street West, Toronto 1.

* Trade Mark, Reg. U. S. Pat. Off. ** Names on request.

DORR

WORLD-WIDE RESEARCH · ENGINEERING · EQUIPMENT

THE DORR COMPANY · ENGINEERS · STAMFORD, CONN.

Offices, Associated Companies or Representatives in the principal cities of the world

From all angles
a beautiful waxing installation

● This modern waxing installation is the culmination of the operational data and design experience acquired by Dilts on some 20 different wet and dry waxing machines built since the war.

Dilts machines regularly produce finished waxed papers at average production speeds of 1200 FPM and they have been run at speeds up to 2100 FPM.

The "Kohler System" constant tension unwind affords the essential tension control necessary to handle webs at high speeds and produce top grade quality products.

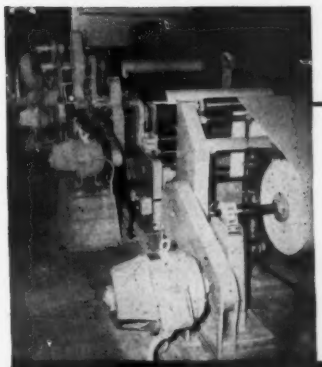
Note the controls and recorders on the operator's side. That's for quality control and uniformity of waxing.

Note the clean cut sectional drive, affording full accessibility to the waxing machine.

Continuous operation, running roll to roll without stops for roll changes, is also available through Dilts when using "Kohler System" reels with Flying Paster on the unwind and Flying Start on the rewind.

If you are ready for new or improved waxing machines or water finishing equipment, buy tomorrow's equipment from Dilts today.

Write for our comprehensive waxing bulletin 1-DM.



Dilts
MACHINE WORKS
FULTON, NEW YORK

SHARTLE BROS. MACHINE CO., Middletown, Ohio
Divisions of THE BLACK-CLAWSON CO., Hamilton, Ohio
Western Sales Office: Mayer Building, Portland, Oregon
Southern Sales Office: 937 Coventry Road, Decatur, Georgia
Associate: THE ALEXANDER FLECK LIMITED, Ottawa, Canada
Subsidiary: B-C International, Ltd., Greener House,
66/68 Haymarket, London, S. W. 1, England

DILTS DESIGNS FOR PRODUCTION PROFITS

New Names

FOR MONEY-SAVING PRODUCTS

Paper mills now using Hercules' fortified rosin size, or its companion product, a size additive in dry form, report substantial savings and increased efficiency. Some mills have already accepted these products for their regular sizing operations—others expect to follow. We've renamed these successful products, and you will now find them available as:

PEXOL

(FORMERLY DRESINATE® 209)

Fortified rosin size, cheaper to use than conventional sizes. Pexol, formerly known as Hercules Dresinate 209, is highly efficient, particularly where difficult sizing problems are encountered. It is readily available in paste or dry form.

SIZE-AID

(FORMERLY DRESINATE® 211)

Hercules Size-Aid, known to many users as Dresinate 211, is a dry concentrated size additive formulated to increase the efficiency of rosin size. Like Pexol, it is readily available.

HERCULES POWDER COMPANY
Paper Makers Chemical Dept.,
965 King Street, Wilmington, Delaware

Hercules' technical representatives will gladly advise you about the use of Pexol and Size-Aid, as well as other Hercules products for paper making.

HERCULES

SIZING MATERIALS AND CHEMICALS FOR PAPER

"PEXOL" AND "SIZE-AID" ARE HERCULES TRADEMARKS

PHS1-7

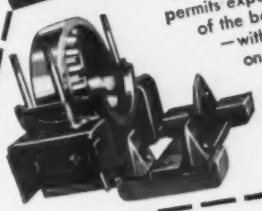
TRAIL BLAZERS to more efficient paper production

Four important developments in paper-making efficiency—some of which are becoming standard practice with bearing manufacturers, *originated with* **SKF**.

THE FIRST

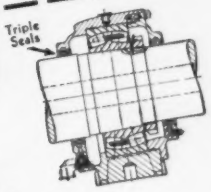
Spherical Roller Bearings applied to paper machinery, with results of smoother paths for power and real operating economies, were SKF Bearings.

THE FIRST



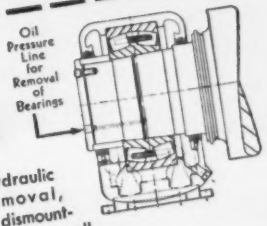
Rocker Mount Design, which permits expansion and contraction of the bearings and driers —with no lateral stresses on the side frames, was an SKF development.

THE FIRST



Triple Seals, for efficient non-rubbing sealing that retains lubricant independent of speed and temperature, were designed by SKF.

THE FIRST



System for Hydraulic Bearing Removal, where such dismounting of large or small bearings becomes a rapid and easy operation that eliminates damage to bearing and housings, was originated by SKF Engineers.

SKF
BALL AND ROLLER BEARINGS

Yes, SKF, in the paper industry as well as many others, has blazed the trail to more efficient, economical, reliable production. And right now, SKF Engineers in cooperation with machinery builders are *anticipating* the needs of advanced designs of paper machinery – so that years from now production will be even more efficient. **SKF** INDUSTRIES, INC., PHILADELPHIA 32, PA., *the Pioneers of the Deep Groove Ball Bearing—Spherical Roller Bearing—Self-Aligning Ball Bearing.* 7100

8 REASONS WHY SKF IS PREFERRED BY ALL INDUSTRY

Integrity – Craftsmanship – Metallurgy – Tolerance Control
Surface Finish – Product Uniformity – Engineering Service – Field Service

SULPHUR

*Interesting Facts Concerning This Basic Raw Material from the Gulf Coast Region

*MAN MADE MOUNTAINS

Sulphur from the field collecting stations is delivered to the vats through insulated pipe lines which discharge directly on the vats. The sulphur is pumped at such a rate that the height of the vat is increased only a few inches per day, the slight vertical rise being the result of a large horizontal area which provides maximum cooling surface and ample tonnage capacity. As the sulphur solidifies it gradually builds up into a great block or vat of solid sulphur, which may be as large as 1200 feet long, 50 feet high, and 200 feet wide, and containing as much as half a million tons of sulphur.

The discharge lines are placed so that the liquid sulphur is spread in an even layer over the entire surface of the vat and is permitted to solidify uniformly. If the liquid sulphur is introduced too rapidly or is not properly distributed, pockets of liquid sulphur will be covered by a crust and remain in the solid sulphur. The low heat-conductivity of sulphur might keep such pockets liquid for a year or more.

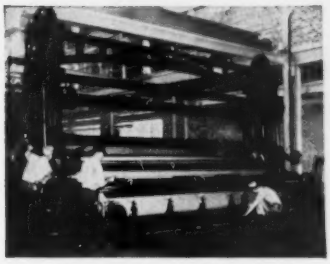
Loading operations at our Newgulf, Texas mine

TEXAS GULF SULPHUR CO. INC.

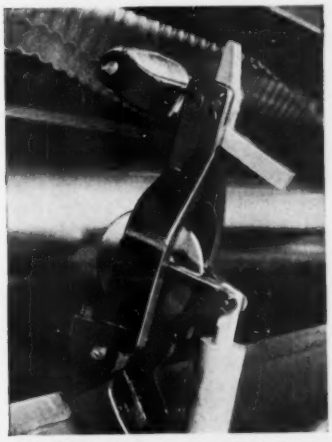
75 East 45th St. New York 17, N. Y.

Mines: Newgulf and Moss Bluff, Texas

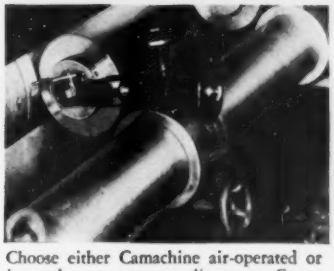
More MILLS depend on Camachines®



Camachine means dependability, speed and top roll quality at the winding end of your paper machine.



◆ SCORE-CUT SHEAR-CUT ◆



Choose either Camachine air-operated or integral type score-cut slitters, or Camachine shear-cut slitting units.

CAMACHINES EVERYWHERE! More than 400 paper and paperboard mills in the United States alone have one or more Camachines in service. More paper of all types is processed into rolls on Camachine equipment than on any other type of slitting and winding machinery.

CAMACHINES EVERY TIME! Rolls produced on Camachines include over 80 different product classifications, such as newsprint, book, kraft and wrapping papers; bristol and box boards; cigarette, gummed and novelty papers; laminated, sensitized, roofing and many other types of paper and paperboard.

CAMACHINES ALL THE TIME! Every new Camachine engineering development is deeply rooted in Cameron Machine Company's sixty years of experience and leadership in the manufacture of more efficient roll production equipment. Cameron research engineers will be pleased to consult with you regarding faster roll production at lower cost, and improved roll quality.

CAMERON MACHINE COMPANY • 61 POPLAR STREET • BROOKLYN 2, N.Y.

Four hundred dots on this map indicate, by state, the approximate location of paper and board mills where one or more Camachines are used.

AA-240

You can depend on Camachines®

PACIFIC COAST SUPPLY COMPANY • PUBLIC SERVICE BUILDING, PORTLAND 4, ORE. • 260 CALIFORNIA ST., SAN FRANCISCO 19, CAL.

TREES AND TIRES may appear to have little in common. Actually, more than two-thirds of the tires made in this country today depend upon wood to provide longer life – added safety – and lower cost.

The strong tough cords and fabric around which these superior tires are built are made of viscose rayon yarn produced by chemically converting highly purified cellulose derived from wood.

Rayonier supplies the yarn producers with a type of purified wood cellulose specially developed to help assure production of yarns with the high strength and fatigue resistance required by tire manufacturers.

RAYONIER
INCORPORATED

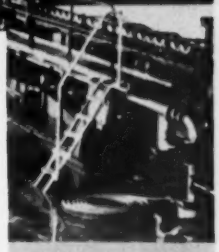
Producers of highly purified wood cellulose for textiles, tire cord, cellophane, plastics

EXECUTIVE OFFICES: *122 East 42nd Street, New York 17, New York*
MILLS: *Hoquiam, Port Angeles, Shelton, Washington; Fernandina, Florida*

MAKING HISTORY WITH I.P. *AT NATCHEZ*

ROSS *Air Systems*

View showing the ROSS roof heating and ventilating system, and 302 ft. long ROSS removable panel machine hood at Natchez.



The history of the industry will record the new International Paper Co. mill at Natchez, Miss., as the first in the world to make dissolving pulps from hardwoods. As in all major developments in the making of pulp and paper, the famous ROSS Air Systems play a prominent part in the achievement. The ROSS heating, ventilating and drying equipment operating at Natchez includes a removable panel hood over all five dryer sections; a Ross-Grewin System furnishing filtered air to the dryers; Heating and Ventilating as illustrated above; Air Make-Up Units for proper air balance; Brown Stock Washer Hoods and Exhaust as well as Bleach Washer Special Exhaust.

ROSS SYSTEMS

J. O. ROSS ENGINEERING CORPORATION

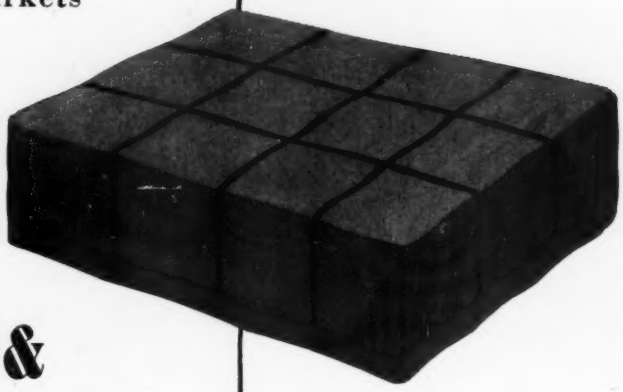
MANUFACTURERS OF AIR PROCESSING SYSTEMS

444 MADISON AVENUE NEW YORK 22, N. Y.

201 N. Wells Street, CHICAGO-6 • 79 Milk Street, BOSTON-9 • 9225 Grand River Avenue, DETROIT-4 • 600 St. Paul Avenue, LOS ANGELES-17
ROSS ENGINEERING OF CANADA, LIMITED, MONTREAL, CANADA • CARRIER-ROSS ENGINEERING COMPANY, LIMITED, LONDON, ENGLAND

Lyddon & Co.

exporters of wood pulp
to all world markets



Parsons & Whittemore

paper exporters
wood pulp

London
Paris
Zurich
Stockholm
Oslo
Sousse
Montreal
Buenos Aires
Sao Paulo

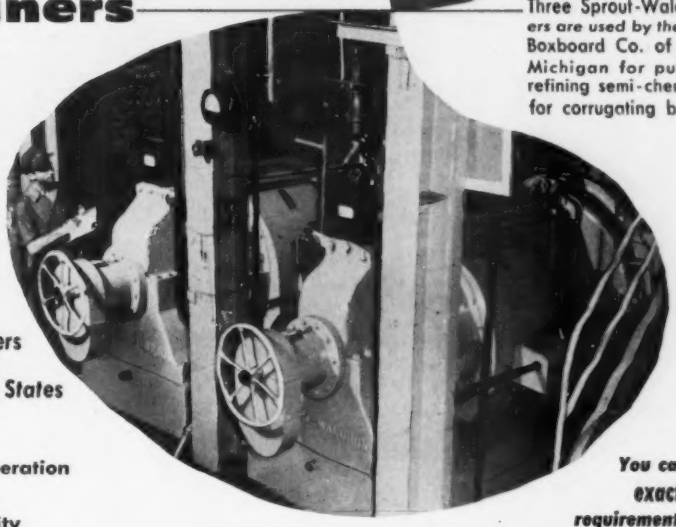
10 East 40th Street, New York 16, N. Y.

to solve refining problems economically—

American Boxboard uses

Sprout-Waldron Refiners

Three Sprout-Waldron refiners are used by the American Boxboard Co. of Filer City, Michigan for pulping and refining semi-chemical chips for corrugating board pulp.



Here's why S-W Refiners *are preferred by mills* **throughout the United States** *and Canada:*

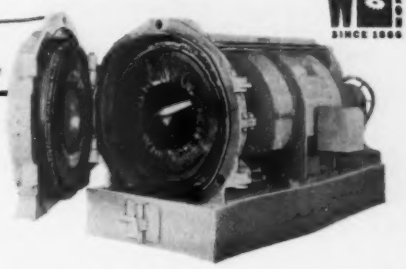
- Flexibility of operation
- High capacity
- High pulp quality
- Ease of feeding
- Low capital investment per ton of pulp
- Low maintenance costs
- Low plate cost per ton of pulp

You can pinpoint exact pulp test requirements with the Sprout-Waldron Refiner.

√ *List of Applications*

√ Semi-chemical Pulping (Bleached-Unbleached)
√ Pre-Refining—High Yield hot brown stock
√ Kraft—Groundwood—Sulphite Knots & Screenings
√ Secondary Refining of Asplund Stock
√ Insulation Board Stock
√ Hardboard Stock
√ Flooring Felt
√ Special Applications

The Sprout-Waldron 36-2 Refiner is *the foremost producer of semi-chemical pulp today*



Send for your copies of Better Fibers, a factual file on successful semi-chemical pulping operations. Write Sprout-Waldron & Co., Inc., 32 Waldron St., Muncy, Pa.

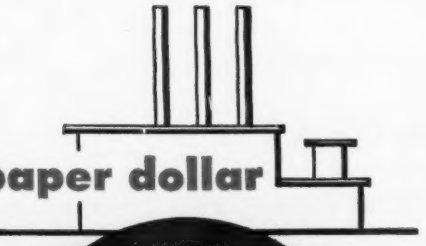
Sprout-Waldron

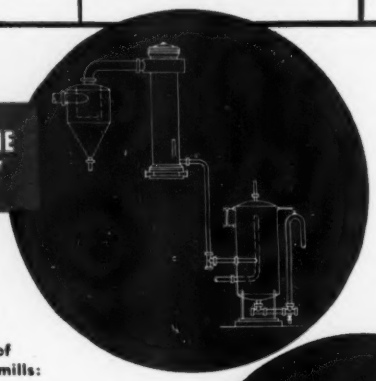
Manufacturing Engineers

MUNCY • PENNSYLVANIA

170

a *plus* factor in the paper dollar



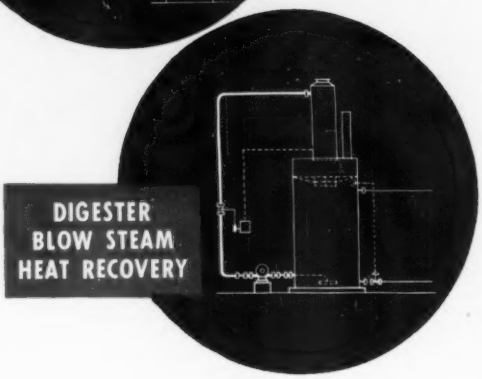


Recent installations by these three leading paper manufacturers confirm once again not only the sound economics of turpentine and digester heat recovery but also the continued acceptance of Foster Wheeler equipment by pulp mills:

RIEGEL PAPER CORPORATION
Acme, North Carolina

ST. REGIS PAPER COMPANY
Eastport, Florida

WEST VIRGINIA PULP & PAPER COMPANY
Covington, Virginia



These properly engineered systems enhance the credit side of the ledger in two ways.

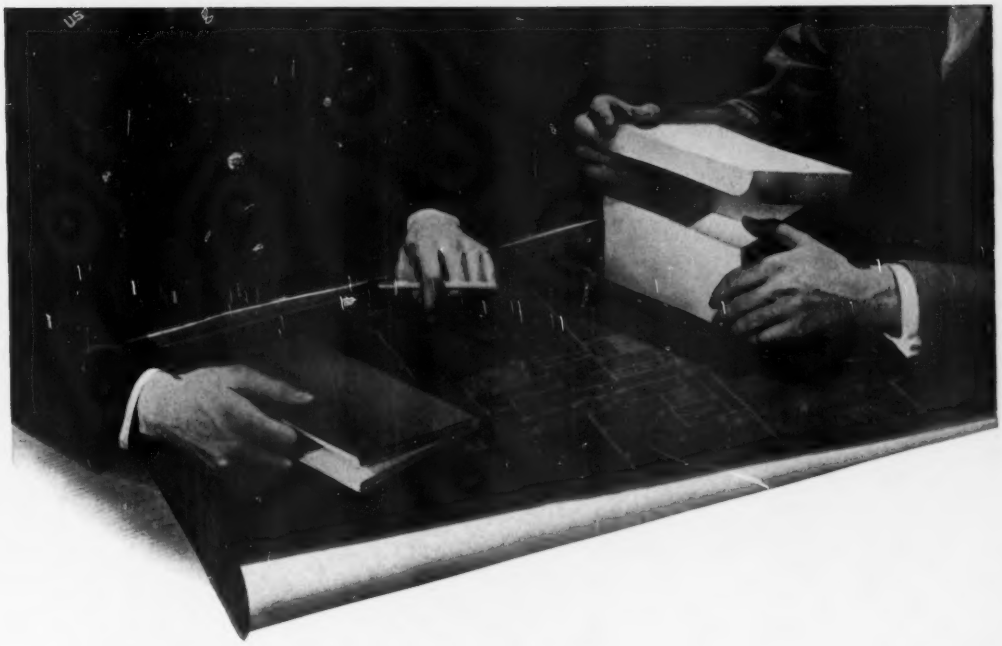
First, two to four gallons of crude turpentine, a particularly valuable by-product on today's market, are recovered from every ton of pulp.

Second, valuable Btu's from digester blow steam are recovered to heat mill water for pulp washing.

Bulletins describing these Foster Wheeler recovery systems will gladly be sent on request.

FOSTER WHEELER CORPORATION • 165 BROADWAY, NEW YORK 6, N. Y.

FOSTER WHEELER



Operation W-S

Civilian and Military Plans Call for Dependable Wet-Strength Papers

PAREZ® Resin 607 is playing a major role in the current preparedness program, providing the many wet-strength paper products in demand by the military. Map, chart and blueprint papers; V-boxes and bags for overseas shipments; wiping papers for use on delicate navy machinery; waterproof tags and labels; shell fuse cartons; paper tarpaulins; army and navy instruction manuals – are a few of the many products that require dependable wet strength.

Civilian uses for wet-strength papers are constantly expanding too... which means that PAREZ Resin 607 should play an important part in the plans of those manufacturers who are interested in developing new consumer markets.

Whether your interests are civilian or military... see your Cyanamid representative for full information on PAREZ Resin 607.

PAREZ Resin 607 offers these extra *advantages...*

- greater dry strength
- improved mullen
- less beating
- better fold
- less surface fibers

ALWAX® Sizes • WAXINE® Sizes • Rosin Size • PAREZ® Resins • AZITE® 900 Liquefier • Synthetic Resins • Casein • Alum • Sulfonated Oils • Fillers • Defoamers • Soda Ash • Caustic Soda • Acids • Clays • AEROSOL® Wetting Agents • CALMICRO® Calcium Carbonate • Sodium Phospho Aluminate and other Paper Chemicals. ®Trade-mark

Sales Offices: Boston • Philadelphia • Pittsburgh • Baltimore • Charlotte • Cleveland • Cincinnati • Chicago • Detroit • Kalamazoo • St. Louis • Los Angeles • San Francisco • Seattle

In Canada: North American Cyanamid Limited, Toronto and Montreal

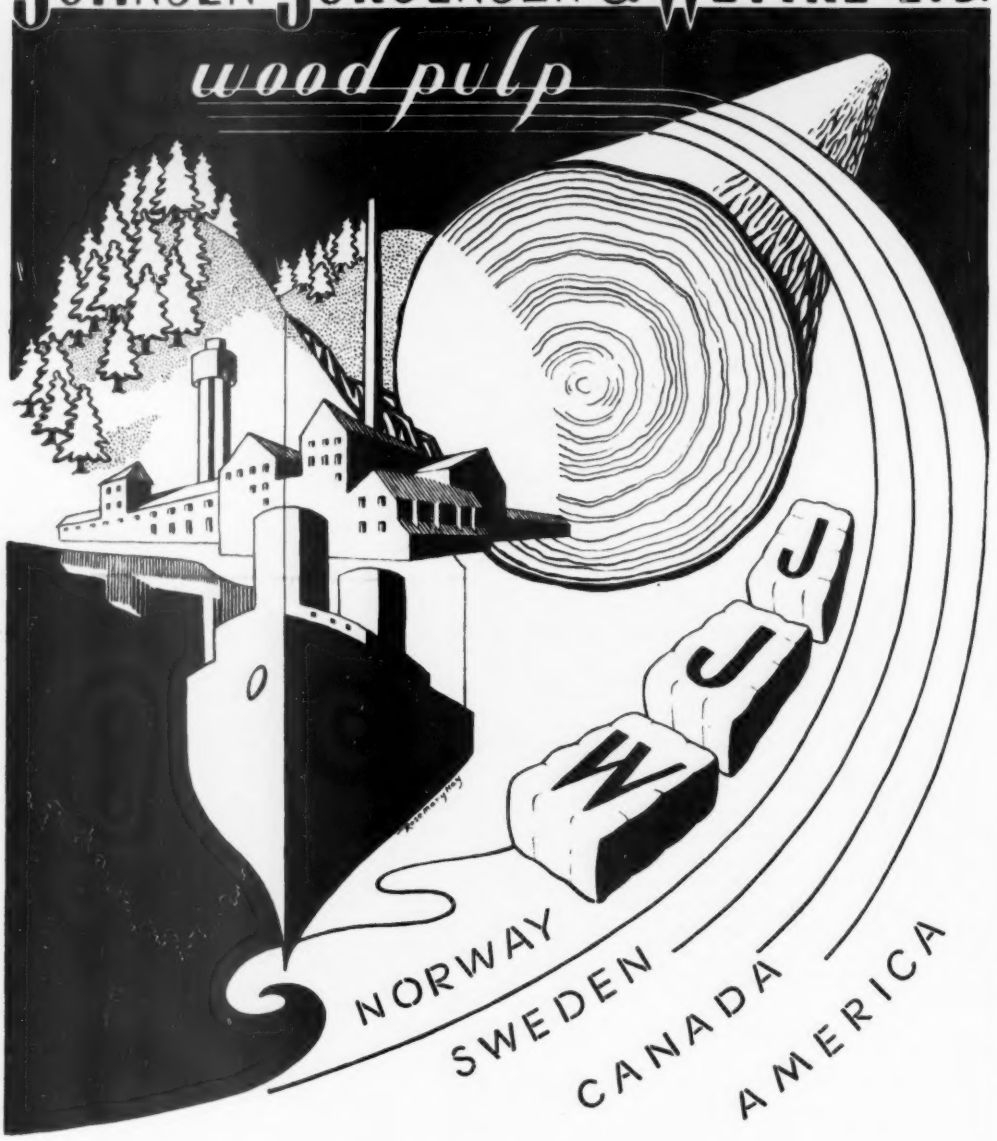
AMERICAN Cyanamid COMPANY

INDUSTRIAL CHEMICALS DIVISION, DEPT. PP9

30 ROCKEFELLER PLAZA • NEW YORK 20, N. Y.

JOHNSEN JÖRGENSEN & WETTRE LTD.

wood pulp



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TELEGRAMS: "WETTRE, LONDON."

EDINBURGH **MANCHESTER**

THE MEAD SALES COMPANY
230 PARK AVENUE, NEW YORK 17, N. Y.
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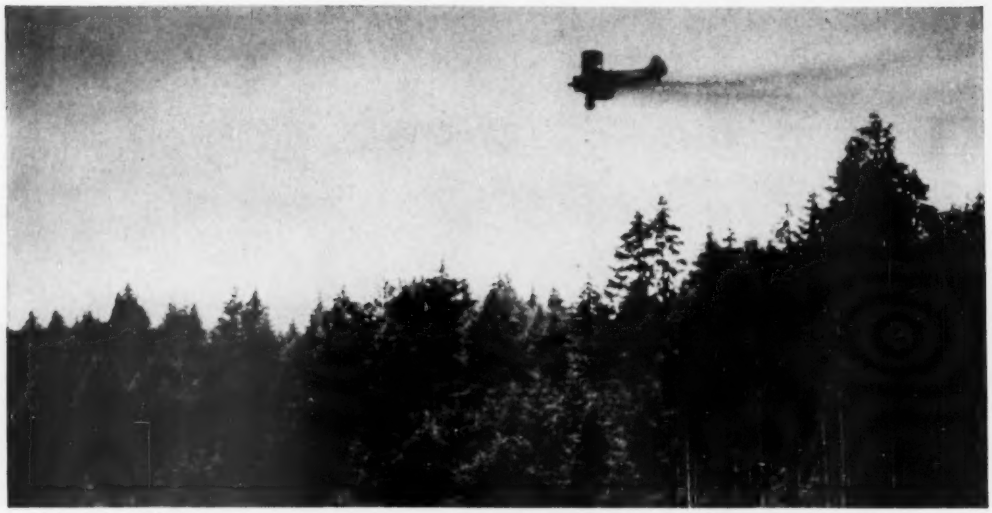
MEAD
pulp

DISTRIBUTORS OF WOOD PULP
BLEACHED AND UNBLEACHED
CHEMICAL AND MECHANICAL WOOD PULP

DON'T THROW CIGARETTES FROM YOUR CAR!

A reproduction of this incident from the fabulous life of Paul Bunyan—the sixtieth of a series—will be sent on request. It will contain no advertising.

Tomorrow's pulp and paper depend on TODAY'S trees



EVEN AIRPLANE SPRAYING...

IS ONLY EFFECTIVE IN MAY AND JUNE

THE SPRUCE BUDWORM IS A "TOUGH CUSTOMER"

His metamorphosis and feeding habits are such that in any given locality the period for effective spraying lasts only about two weeks . . . and these vulnerable periods are limited to the months of May and June. No ordinary spraying for him . . . he deserves special treatment!

To help put the budworm in his place, Pennsalt gladly cooperated with other interests, as well as state and federal authorities, by developing a special forest spray—low enough in cost to permit the fast, wide-area spraying required, high enough in toxicity to give a 97% kill.

Since the battle against the budworm is likely to be a long one, additional support from every quarter will be helpful.

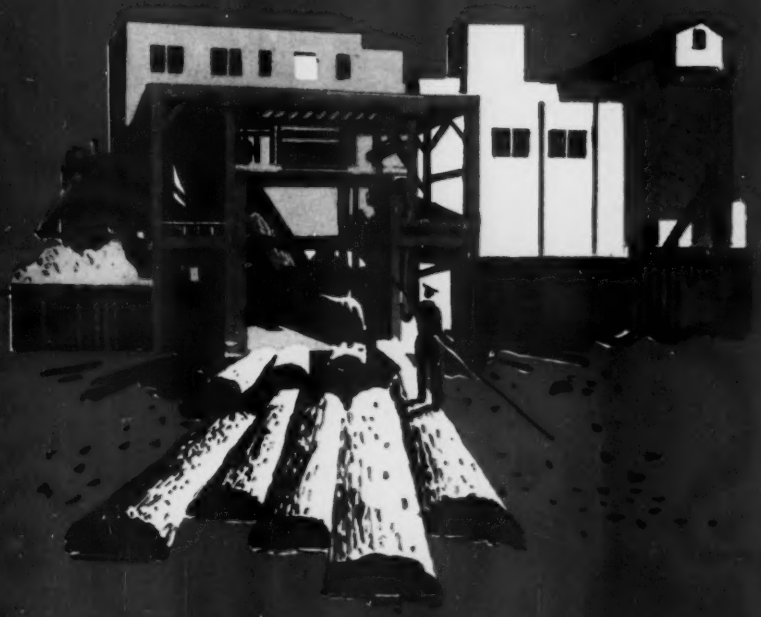
In the West:
Pennsylvania Salt Manufacturing Company of Washington . . . Tacoma, Washington; Portland, Oregon; Berkeley and Los Angeles, California.

In the East:
Pennsylvania Salt Manufacturing Company, Philadelphia 7, Pa.

Liquid Chlorine • Caustic Soda • Bleaching Powder • Potassium Chlorate • Sodium Chlorate • Anhydrous Ammonia • Perchloron® • Sodium Arsenite • Sodium Hypochlorite.

PENN SALT
chemicals

Progressive Chemistry for Over a Century



WHITER, CLEANER PULP

Puget Sound, long one of the greatest producers of unbleached sulphite wood pulp in the world, has now added fully automatic equipment enabling it to produce bleached pulp ... whiter and cleaner than ever, yet retaining the long-fibre strength for which Puget has always been noted.

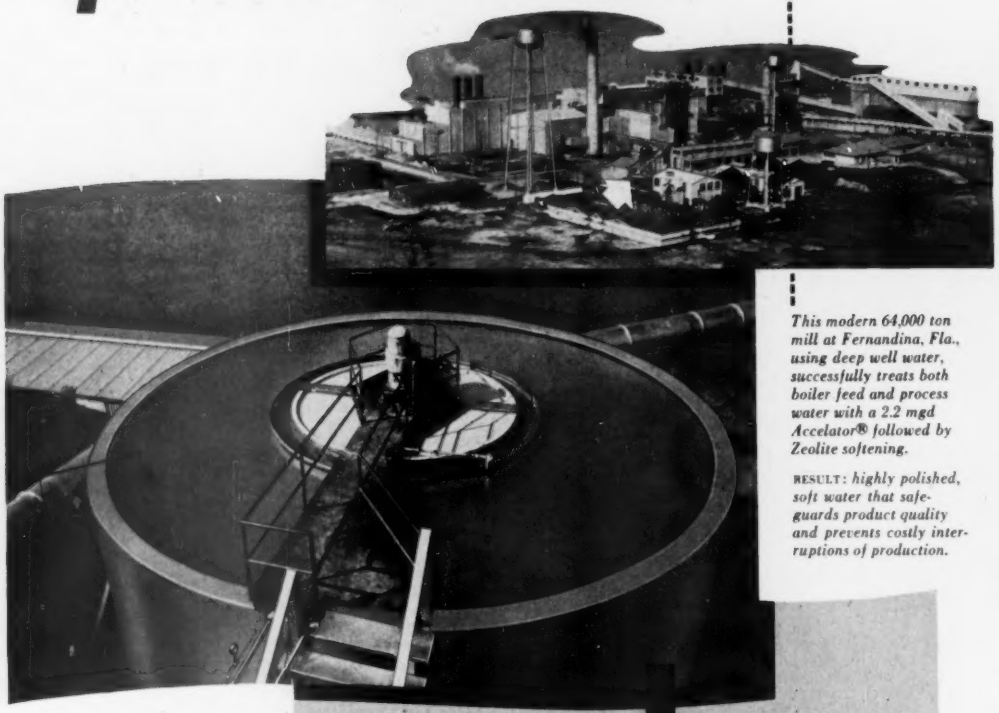
PUGET SOUND

PULP AND TIMBER COMPANY

BELLINGHAM • WASHINGTON

this mill uses

polished water



This modern 64,000 ton mill at Fernandina, Fla., using deep well water, successfully treats both boiler feed and process water with a 2.2 mgd Accelator® followed by Zeolite softening.

RESULT: *highly polished, soft water that safeguards product quality and prevents costly interruptions of production.*

RAW WATER FROM WELLS	INFILCO-POLISHED
HIGH in dissolved minerals, alkalinity, magnesium and calcium hardness	ZERO hardness
APPRECIABLE iron and color	ZERO iron and color
LARGE AMOUNT of silica present	LOW alkalinity and silica

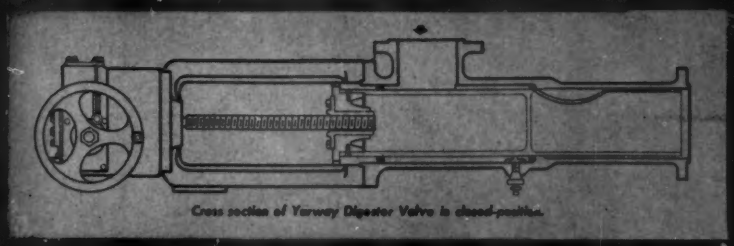
SEND FOR BULLETIN 50-I
"PRODUCTS AND PROCESSES FOR INDUSTRY"
Complete information on Infilco equipment for water treatment and waste disposal.

INFILCO
* BETTER WATER CONDITIONING * AND WASTE TREATMENT SINCE 1894

INFILCO INCORPORATED | *Tucson, Arizona*

FIELD ENGINEERING OFFICES IN 26 PRINCIPAL CITIES

World's Leading Manufacturers of Water Conditioning and Waste-Treating Equipment



Cross section of Yarway Digester Valve in closed position.

C R

YARWAY SEATLESS DIGESTER BLOW VALVES FOR...

- [illegible]
- [illegible]
- [illegible]
- FAST OPERATION
- [illegible]

● At the vast new plant of the [illegible] River Newsprint Co., in Alabama, six 8" Yarway Seatless Digester Blow Valves are controlling the discharge from pulp digesters.

Their unique seatless principle, with a balanced sliding plunger, permits tighter shut-off, free discharge with no "hung-up" solids, and low maintenance.

Motor control permits fast operation by push button at any remote spot, usually the charging floor.

Other mills report that by using Yarway Digester Seatless Blow Valves, they get more cooks per day, with less operating and maintenance attention, than with any other type valve for the service.

For full details and specifications call your nearest Yarway office or write for Yarway Bulletin B-440.

YARNALL-WARING COMPANY
103 Mermaid Avenue, Philadelphia 18, Penna.
BRANCH OFFICES IN PRINCIPAL CITIES

YARWAY **DIGESTER VALVES**

HOOKER...

basic source for

PULP and PAPER *chemicals*

LOADING LIQUID CHLORINE . . . one of many careful operations that preserve the high purity of chlorine from the efficient Hooker Type "S" Cells, at Niagara Falls and Tacoma, to your plant.

More than 50 large U. S. pulp and paper producers specify Hooker Chemicals for their processing requirements, such as chlorination and bleaching of pulp, caustic extraction, and de-inking of paper scrap.

These heavy users of chemicals find that Hooker purity and shipment-to-shipment uniformity are valuable aids in processing and in controlling uniformity of the finished product.

Whatever *your* needs for chlorine, caustic soda, or their many derivatives, you will like the way Hooker works to ease your supply problems. As fast as stocks are ready, they are shipped to you on dependable schedules, carefully point-checked to insure delivery when promised.

Production of Hooker Chemicals is at an all-time peak, and facilities are being expanded to meet new demands as promptly as possible. For up-to-date delivery information, please keep in touch with your Hooker sales representative.

- Caustic Soda
- Chlorine
- Muriatic Acid
- Sodium Sulfide
- Sodium Sulfhydrate

FOR COMPLETE LIST of Hooker Chemicals, send for Bulletin 100, which describes properties, typical uses, and shipping containers. Please write on your business letterhead.

From the Salt of the Earth

HOOKER ELECTROCHEMICAL COMPANY

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NEW YORK, N. Y. • WILMINGTON, CALIF. • TACOMA, WASH.

HOOKER CHEMICALS ®

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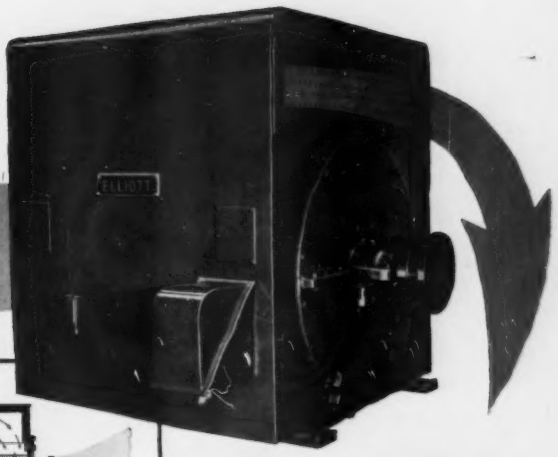
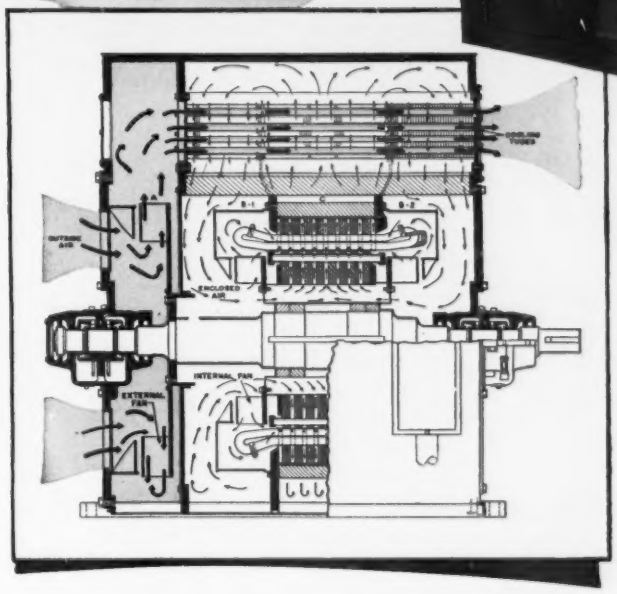
CHLOROBENZENES • SODIUM BENZOATE • SULFUR CHLORIDES • CYCLOHEXANOL • MONOCHLOROACETIC ACID • PIPERIDINE • CUSTOM HYDROGENATIONS

IT'S Heat exchanger COOLED





The NEW ELLIOTT TEFC MOTOR

A carefully designed, highly efficient fan in the external air circuit takes atmospheric air from one end of the motor, circulates it through the inside of a bank of special alloy finned tubes and discharges to atmosphere at the coupling end. Fans on each end of the rotor core circulate air within the closed internal air circuit over coils and core of motor, over finned exterior of tubes of heat exchanger (for cooling) and back to suction of fan again.

It's a simple heat exchange system — with however, certain unique advantages in the design and location of the cooling unit, the arrangement of the air circulating passages, and the housing of Elliott-fabricated steel — crack-proof, rigid, and with rust-inhibiting finish. This new TEFC motor is Elliott motor engineering at its best.

Built in 2-pole ratings 300 to 4000 hp and for lower speeds in sizes equivalent to 50 hp, 14-pole minimum, up to 3000 hp, 4-pole maximum.

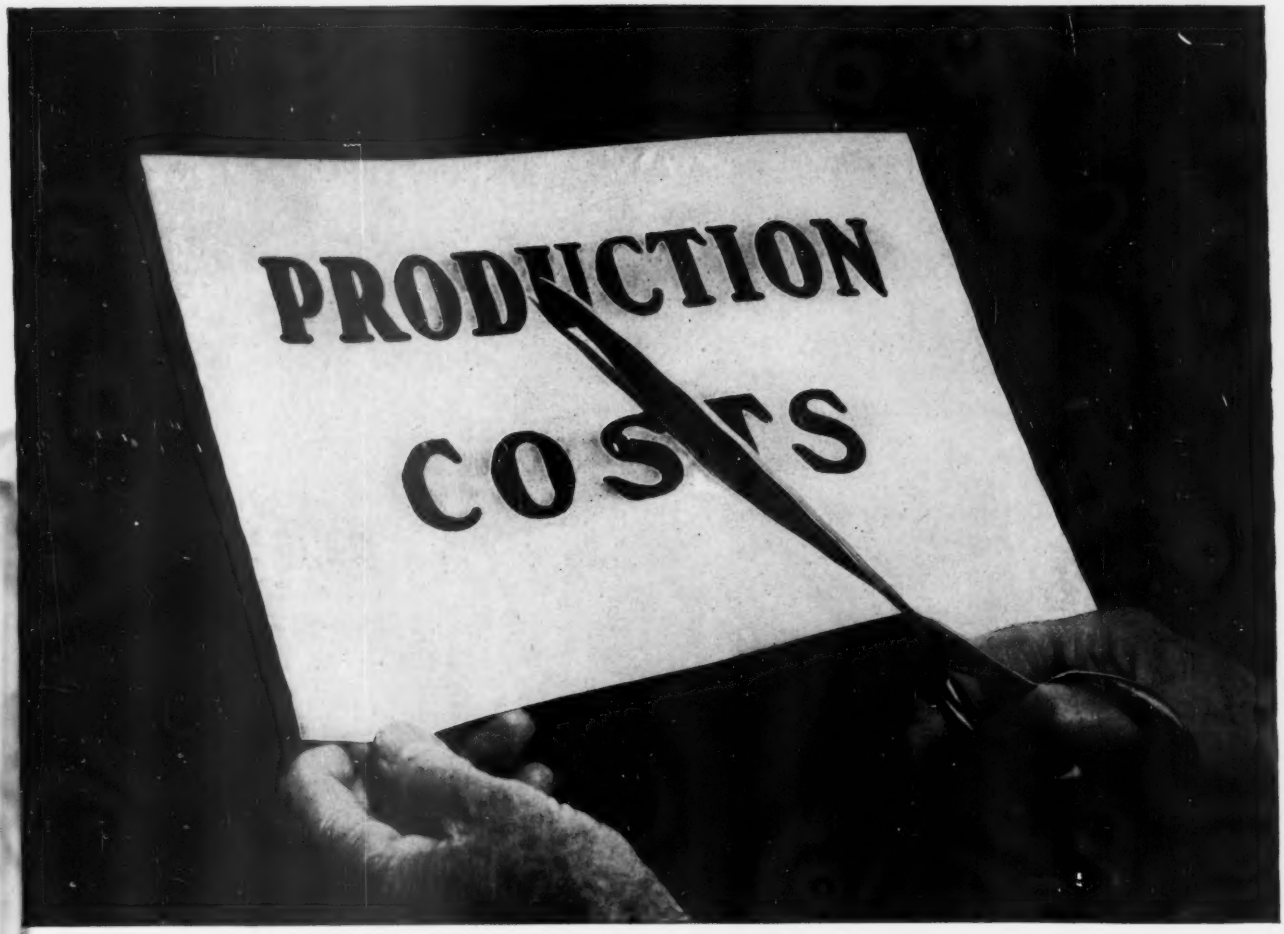
WITHOUT STOPPING THE MOTOR the cooling unit can be cleaned, from the coupling end. The straight tubes can be quickly brushed out with simple brush or mechanical tube cleaner as required—a valuable feature under the conditions in which the TEFC motor is generally used.

AIR CIRCULATION IS STRONG AND POSITIVE, in the case of the enclosed air as well as of the outside cooling air.

COOLING UNIT CAN BE REMOVED for inspection, cleaning of the finned tubes, or for replacement should corrosive conditions ultimately require it.

NO INCREASE IN FOOT-TO-SHAFT DIMENSION. The cooling unit being located at the top, shaft height permits of the same easy alignment with the driven unit as in the case of a standard motor.

L-808



Cut Production Costs with Bagley & Sewall Suction Rolls

You can reduce your steam and felt costs . . . and you can increase your tonnage and quality of paper by the installation of Bagley and Sewall Suction Rolls. Those are mill-proven facts.

With the demand today for more and more salable paper, it will be smart to consider the installation of these Rolls. Like all Bagley and Sewall Equipment, Bagley and Sewall Suction Rolls are precision built for better service.

Write us. We'll gladly give you the benefit of our experience.

BAGLEY & SEWALL

DESIGNERS AND BUILDERS OF PAPER MAKING MACHINERY

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COLOR
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DEPENDABLE
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Wherever highest accuracy and complete reliability in flow measurement and control are vital to successful processing, it is significant that Foxboro Instrumentation is preferred. Whether your problem involves gas, steam, or liquids . . . in pipes, ducts, or open channels . . . the premium quality and complete diversity of Foxboro Instruments, backed by unequaled application experience, assure you an extra measure of satisfaction.

indicators • recorders • controllers • integrators
transmission systems • controlled valves • orifices
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FOXBORO
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For over 40 years, specialists in the measurement and control of temperature, pressure, flow, liquid level, humidity . . .

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See General American for

CREATIVE EVAPORATOR ENGINEERING

Conkey Integral Self-Supporting Evaporator needs less space—no housing. Easier installation! Greater capacity!

Designed to do your job best!

With simple design, simple operation, the Conkey Integral Self-Supporting Evaporator makes big savings wherever it is installed. Each effect of the evaporator combines in a cylindrical pressure vessel all these elements: a vapor body—centrifugal entrainment separator—heating element—condensate flash chamber and a supporting skirt. All structural supports are eliminated. Foundation is a simple slab footing.

The new Conkey Integral Evaporator is shipped fully assembled and a single up-ending operation sets it in place. Its vertical positioning saves floor or ground space, and where weather conditions permit, the entire unit may be installed outdoors. No housing is needed except for pumps and instruments.

Because its design reduces pressure drop losses between effects, the Conkey provides an increased working temperature drop across the heating element surface. Result: a net positive gain in evaporation—extra evaporating capacity. For complete technical information, write for Evaporator Bulletin.

Five-body quintuple effect, self-supporting Conkey Flat Evaporator installed at the new Calcasieu Paper Company mill, Elizabeth, La.

*Patented

Other General American Equipment:
Turbo-Mixers, Filters,
Dewaterers, Dryers,
Towers, Tanks, Bins,
Pressure Vessels

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Interesting Facts about Paper

Largest single purchaser of paper in the world is the U. S. Government Printing Office. Delivery averages the equivalent of 16 carloads daily.

interesting facts about CHRYSOIDINE Y DUSTLESS

CHRYSOIDINE Y DUSTLESS is a popular basic orange, extensively used in coloring kraft, tissue, boxboard, poster, news, ground wood, and catalog papers. It dyes both sized and unsized papers and gives excellent results when used on unbleached fibers.

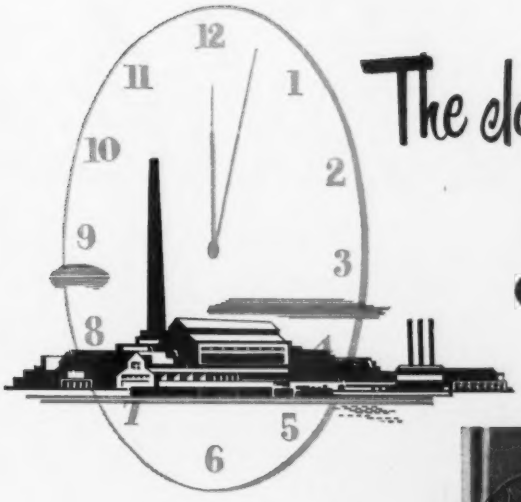
Your Calco representative will be glad to supply full information on CHRYSOIDINE Y DUSTLESS and the many other colors in the Calco line.

Calco®

AMERICAN Cyanamid COMPANY

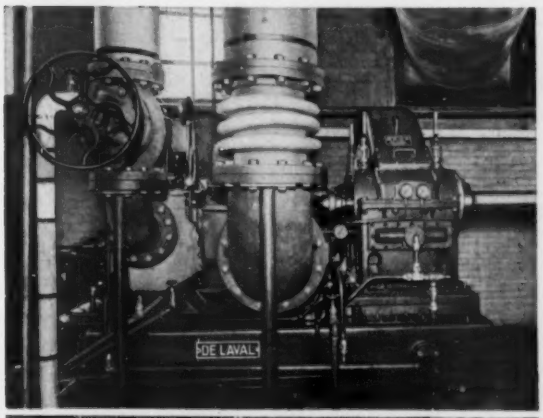
CALCO CHEMICAL DIVISION
DYESTUFF DEPARTMENT
BOUND BROOK, NEW JERSEY

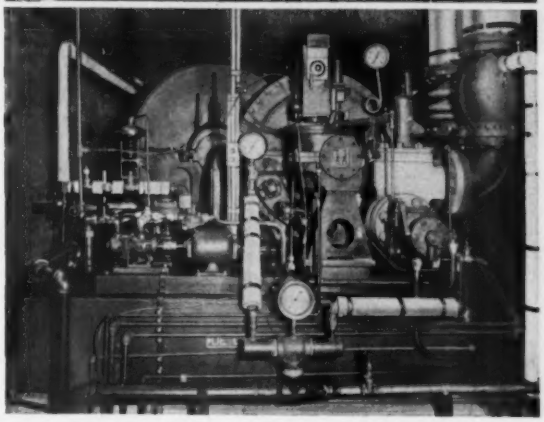
New York · Chicago · Boston · Philadelphia · Charlotte · Providence



The clock never stops on this

DE LAVAL
GEARED TURBINE
AT FINCH, PRUYN





Round-the-clock papermaking requires peak turbine dependability. That's why Finch, Pruyn selected this 400 hp geared De Laval multistage turbine to drive their new 122-inch Pusey and Jones Fourdrinier machine.

With a maximum speed change of 7.5 to 1, this De Laval turbine provides a wide range variable speed drive. It offers a maximum capacity rating of 525 bhp at 4945 rpm with a gear reduction to 480 rpm. Minimum operating turbine speeds go as low as 659 rpm geared to 64 rpm.

Anticipated future operation of this paper machine at 1200 feet per minute will utilize the turbine's top speeds. Currently the machine is producing at the rate of 1,000 feet per minute, requiring 375 hp at 4130 rpm geared to 400 rpm.

De Laval engineers are old hands at making turbines that stay on the job year after year. Investigate the De Laval line now. Best way to start is with Bulletin 4200-A. Write for your copy today.

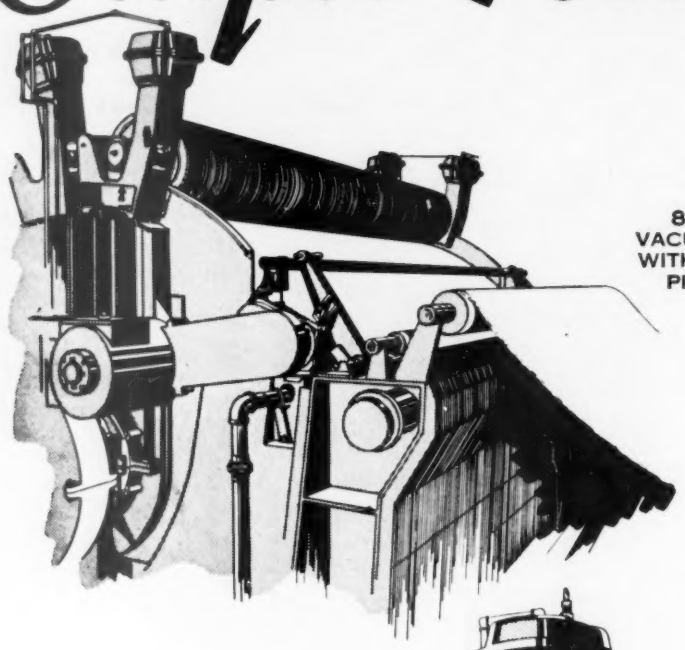
50th Anniversary

DE LAVAL *Steam Turbines*

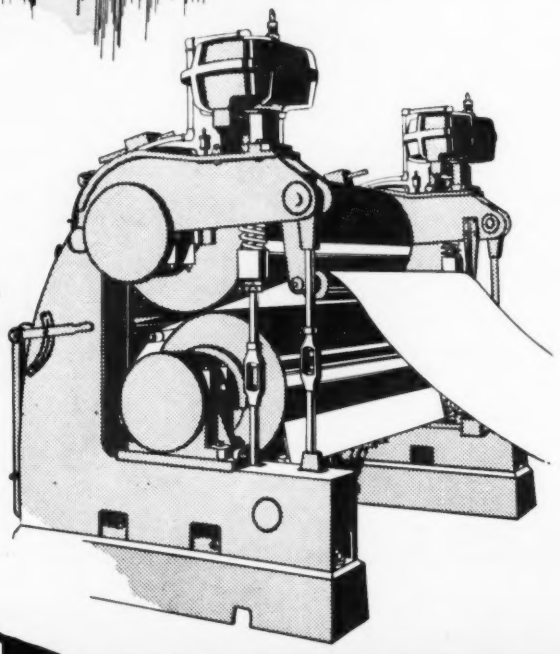
DE LAVAL STEAM TURBINE COMPANY, TRENTON 2, NEW JERSEY

DL-115

Impco Feltless



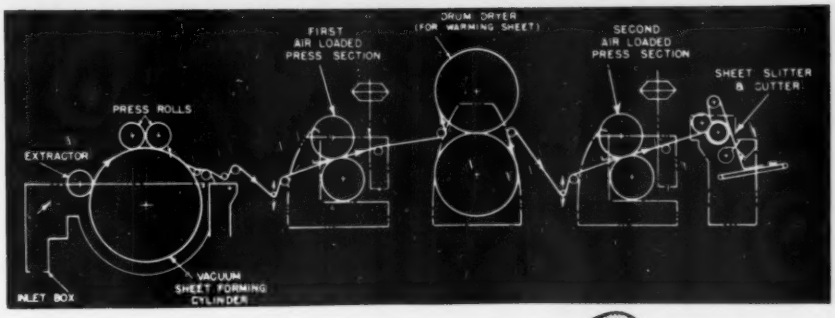
8' DIAMETER
VACUUM WET–END
WITH AIR–LOADED
PRESS ROLLS

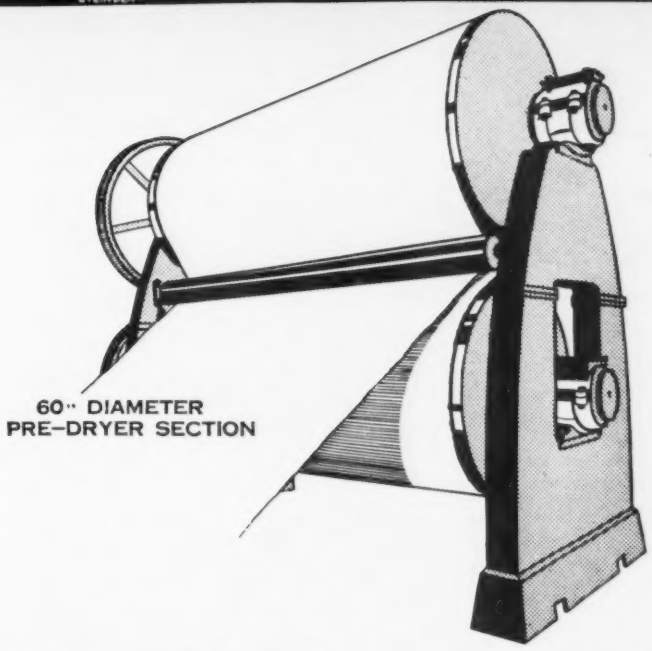


MAIN AIR LOADED
PRESS SECTION
WITH
36" DIAMETER
PRESS ROLLS

IMPCO

Wet Machine





60" DIAMETER
PRE-DRYER SECTION

The "Impco" Feltless Wet Machine is designed to produce sheet densities in excess of 50% A. D. on all types of chemical, semi—chemical and groundwood pulps.

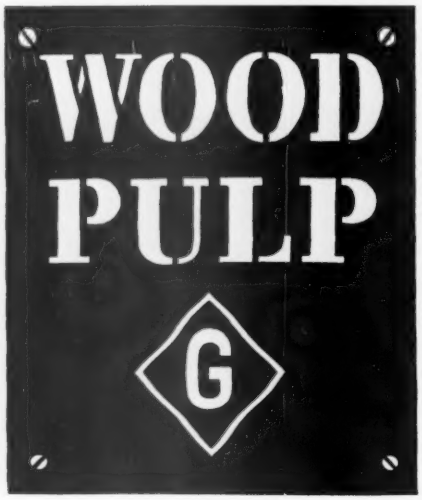
The complete unit is arranged so that it can be installed prior to a pulp dryer, or the "Impco" Slitter and Cutter can follow the final press to produce sheets of any desired size.

The "Impco" Feltless features 8' diameter forming cylinder — 36" diameter, grooved air-loaded press rolls—60" diameter pre-dryers — enclosed heavy herringbone gear drives on the press sections all combined to give the customer a rugged wet machine capable of doing its rated job, day by day.

J-12

IMPROVED PAPER MACHINERY CORPORATION
NASHUA, NEW HAMPSHIRE

Established 1886



"Let knowledge grow
From more to more."

TENNYSON

Of all the industries serving mankind, none has a prouder place than Pulp and Paper.

The greatest medium for the communication of ideas and information, Paper promotes progress by recording for endless tomorrows the log of today's knowledge and achievements.

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"The Cellulose Age"
PRODUCTION AND MANAGEMENT JOURNAL OF THE NORTH AMERICAN PULP AND PAPER INDUSTRY

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Publication Office
LOS ANGELES—815 Wilmer St., (17); DU 9-1112
Executive, Editorial and Advertising Offices
SEATTLE—71 Columbia St. (4); MA 1626
Other Editorial and Advertising Offices
NEW YORK—370 Lexington Ave. (17); MU 3-9294
CHICAGO—55 East Washington; ST 2-1100
NEW ORLEANS—3518 Dante St. (18); AM 2762
VANCOUVER, B. C.—675 W. Hastings St. (2); MA 1520
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After 25 Years—An Alaska Industry

In the very first issue off the press of this magazine—over 24 years ago—our "lead-off" article discussed the vast potential of Alaska as a producer of pulp and paper.

Also in that issue was an article by-lined by B. Frank Heintzleman, regional U. S. Forester for all of Alaska, in which he described this great potential.

Also in that first issue, this magazine announced in an editorial that "the territory of Alaska has one of the most potential pulp and paper resources on the face of the earth." And we announced that henceforth this magazine would publish "*authoritative*" articles about the development of a new pulp and paper industry in that territory.

A quarter of a century is a long, long time.

In this issue of PULP & PAPER—for the first time in that long span—we are able to announce that, barring a completely unforeseen or supernatural interruption—a pulp industry is now assured for Alaska and the first pulp will be made by 1953.

All through that 25 years, PULP & PAPER has been in the forefront in carrying news of developments in Alaska. We are happy, now an industry is assured, that we always published *authoritative* articles; we never led our readers astray with false build-ups of so many bubbles that rose only to burst.

In that 25 years PULP & PAPER itself has grown from a regional to an international magazine. This year we published our first WORLD REVIEW (included in subscription to PULP & PAPER), because the industry today recognizes pulp and paper as vital world commodities. And so, Alaska, rich in timber, becomes a larger factor in the modern pulp and paper world.

Hats Off to Frank Heintzleman!

The people of Alaska, the people of all the U.S., and the pulp, paper, rayon, cellophane and other industries, all of which are intensely interested, should take their hats off to B. Frank Heintzleman.

More than any other single individual (aside, perhaps, from the investors themselves) he is responsible for bringing a pulp industry to Alaska—an industry which will bring that territory wealth, jobs, good homes and good living and working environment and advantages.

For 30 years—beginning even before he wrote that article on Alaska in the very first issue of this magazine—Alaska's Regional U. S. Forester has crusaded for a pulp and paper industry in Alaska. You may be sure that he faced many cruel disappointments and discouragements. Wars, depressions, all kinds of rebuffs, false rumors and charges—none of these stopped him very long.

We have seen him when he was feeling mighty low, but he was never licked.

And to Mr. Heintzleman, the doughty little forester of Alaska, who has probably interviewed almost as many pulp and paper executives as our own staff of editors, Ketchikan is just a beginning. He has five more pulptimber allotments all staked out in Alaska, ready to keep five more mills operating forever!

We presume he will keep on traveling up and down this land, spreading his gospel, until he disposes of every last one of them!

Inflation and Class Hatreds

With the American President blaming "special interests" for inflation and his political party's national committee advocating an outright so-called "grass roots" political campaign to force the American Congress to give the President more restrictive controls and powers over commodity production, the words written by a leader in this industry are a grave warning of what this may lead to.

As a "guest editorial writer" for the Portland, Ore., Oregonian, Mr. Frank N. Youngman, vice president of Crown Zellerbach, wrote:

"The most important danger of inflation is the legacy of bitterness and class hatred which inevitably follows in its wake. In the endless struggle to keep up with constantly rising prices, each group in the country struggles against the other. Each comes to believe all others are profiteering. The worker may distrust the manufacturer, the manufacturer the farmer, etc. Inflation breeds class hatred; animosities so deep as to destroy a nation's unity. China and France are excellent present-day examples."

The President demands, however, did not meet with Congressional approval as when he grudgingly signed the recent controls bill. The issue will continue to be debated. On this one point of throwing blame for inflation on any one group or segment of the population, some care and thought of possible consequences would seem in order.

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PULP & PAPER circulates all over the world. It is read in virtually every pulp and paper company office and mill throughout the United States, Canada, Mexico, Alaska, Hawaii, the Philippines, Australia and New Zealand. It is read in many other offices and mills in Argentina, Brazil, Chile, Colombia, Cuba, Ecuador, Uruguay, Venezuela, England, Ireland, Scotland, Sweden, Norway, Finland, France, Germany, Austria, Belgium, Holland, Czechoslovakia, Italy, Spain, Switzerland, Soviet Russia, Poland, Jugoslavia, India, Pakistan, Israel, South Africa, China, Japan, Formosa, both near and far around the world, where pulp and paper are made.

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STOCK FORMATION ON CYLINDERS

WHAT IS THE MECHANISM OF IT?

By R. Frank Hollis

General Superintendent, Alton Box Board Co., Alton, Ill.

1. *Foreword.*

It may be best to define what we normally intend to mean when we use the word "formation" when the subject is a cylinder type paperboard machine. We consider that formation means and includes the sheet and the condition thereof, starting at the point where the sheet forms on the mould to the point just beyond the couch roll nip where it is then a part of the preceding sheet or, at least, is attached to the felt. The practical reason for this is that the couch and the felt and, in fact, the slice board ahead of the couch have a considerable effect on the sheet that is formed in the vat. Therefore, we arbitrarily do not differentiate this from the formation process on the mould itself, but include it.

For many years past there have been conceived of and operated, various cylinder types of vats and moulds together with a great number of different types of accessories. Some assemblies seemingly have been conceived in the hope of obtaining a "universal" machine; others are very plain and, in fact, lack even a few of the conveniences and devices which we normally consider today as standard.

The existence of all these many different types right today is sufficient evidence to demonstrate that there are many different ideas on how to design, operate and control the cylinder type paperboard with particular emphasis on the mechanism of stock formation thereon. A review of the various arrangements and contraptions that have been tried, installed and operated likewise clearly demonstrates that there are many different ideas on harnessing the very commonly known laws of gravity, fluid flow, and other natural phenomena. Some of these ideas are correct, some are false, and a few are even in the realm of having no effect, good or bad, whatsoever.

It must be distinctly understood that the main difference in the design, operation and control as it effects the mechanism of stock formation on the cylinder on the paperboard machine as compared to a thickener, saveall or filter, etc., is that the formed sheet is intended to and must be of uniform density and correspondingly wet caliper across the machine, and this must be maintained continuously in the running direction. Thus, we are considering a three-dimensional object which is the uniform sheet of board being formed; another major consideration is the lineal speed of the machine which required us to translate our thinking into the understanding of required forming rate of the sheet on the cylinder mould surface.

Replies and Comments Cordially Invited . . .

While written ostensibly as a questionnaire, the article on this page by Mr. Hollis is provocative reading for any cylinder machine operator or engineer and, in a subtle way, gives forth with a lot of important information while asking questions.

Mr. Hollis is the type of fellow who genuinely enjoys digging into engineering problems, finding loopholes in accepted practices, and stumping the experts, and his position in one of the world's biggest board mills should qualify him for the role.

Cylinder board machine executives, operators or engineers are cordially invited to reply, or comment upon, the points raised by Mr. Hollis.

Send replies to PULP & PAPER, 71 Columbia St., Seattle, Wash., or any of our other offices.

It may be that you would prefer to reply or comment upon only a portion or portions of his questionnaire that interest you. Your comments will be welcome in any form, and our plan is to publish replies.

No fancy degrees are after Mr. Hollis's name, but he has wide practical experience. He attended Louisville University and Purdue, receiving a B.S. degree in mechanical engineering from Purdue. He served with a machine works in Louisville, then joined Alton Box Board at its Lafayette mill in 1928, moved to Alton, Ill., in 1932 as mechanical engineer and now is general superintendent.

ROY H. BREYFOGLE (left), Vice President in Charge of Manufacturing, and R. FRANK HOLLIS (right), General Superintendent of Alton Box Board Co. Between the two of them, they have invented or developed several unique designs and innovations on the board machines and other operating units. Mr. Hollis, who is shown enjoying his Missouri meerschaum, designed, among many other items, the original "Fumididdle," with intricate high capacity pulp pumping and preparation system ahead of No. 4. Mr. Breyfogle, perhaps, is best known for his own design primary suction drum on No. 4.

At this point it is necessary to consider that regardless of the type or condition of a given cylinder paperboard machine, it has in the past and still will in the future, respond correspondingly to the artful human judgment used by the operator. It is our firm belief that there is not yet a vat arrangement that has a facility to handle any and all types of boardmaking under variable conditions without the artful manipulation of the machinetender.

With all this in mind and with the full realization that considerable knowledge on the subject will exist amongst a large group of men associated in the business of designing, operating or controlling cylinder type paperboard machines, we have outlined a discussion in the form of a questionnaire, as follows:

2. *Types of Vats.*

There are two generally recognizable types of vats: (a) Counterflow and (b) Uniflow.

Either of the above types may be operated so far as augmenting water passage through the cylinder mould wire by: (c) Gravity flow or (d) Augmenting by sealing the mould with a vacuum inside. There may be a type, or types, beyond this description but they are not in common use.

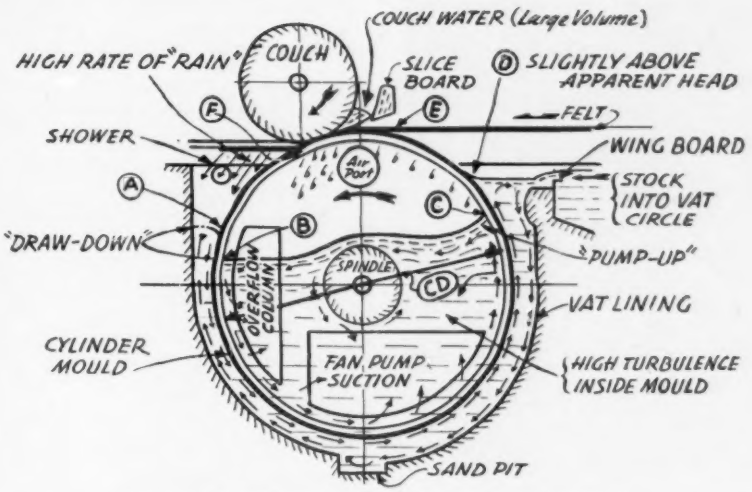
3. *Size of Mould.*

One of the most discussed subjects when rebuilding or purchasing new a given machine is the diameter of the cylinder mould and all the ramifications that go therewith.

a. Should the mold be 36", 42", 48", 54", 60", 66" or xx"? What brought about the selection of mould diameters on even 6-inch increments? Was it a convenience to the mechanical draftsman?

b. For a given type of production considering kind of board, required quality and the desired productive rate, will it be better to install a ten-cylinder 36" diameter mould machine or a five-cylinder 72" diameter mould machine?

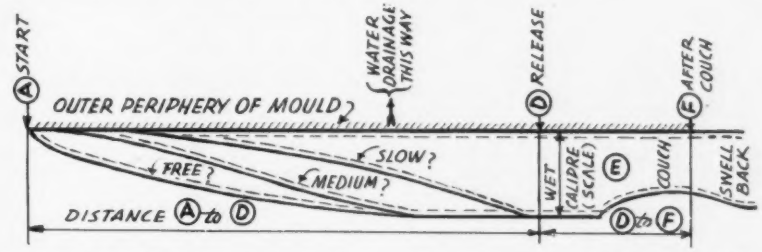
c. Can question (b) be answered by consideration of only the phenomena of board-making alone or are there other factors such as the economics of installa-



WHAT IS THE MECHANISM OF STOCK FORMATION ON A CYLINDER?

This drawing by the author, R. FRANK HOLLIS, General Superintendent, Alton Box Board Co., Alton, Ill., is based on the world-famous Altonian, the No. 4 216-inch cylinder machine at his mill, which was the world's biggest machine of its type and greatest producer in the cylinder world when it was installed a few years back, and still is among the tops. This hand sketch is of a typical cross-section of the modern ABBCO vat arrangement. Encircled letters with arrowheads are shown thereon to permit definition of points of interest. Drawing is not to scale. (Counter-flow, 500 fpm. and above).

BELOW IS A SKETCH by Mr. Hollis, entitled "What is the Forming Rate of Different Stocks?" Terms, "slow," "medium" and "fast," mean S-R Freeness. This drawing also based on No. 4 at Alton.



tion cost and future operating cost involved that somehow or other have to be evaluated and formulated thus solving the answer in terms of cylinder mould diameter? What is your guess as to the methods used in the past on determining cylinder diameter? Do you suspect that cylinder diameter oftentimes was selected first, and all other parts of the job organized therefrom?

4. *Contour of Vat Lining.*

There are all sorts of conceptions regarding the contour of the vat lining or, expressed in other terms, the clearance space from lining of the vat to the mould wire.

a. Should the contour or clearance be a uniform circle; at least in the lower half of the vat?

b. Should the inlet side be different from the opposite side? Should the inlet side be eccentric to the cylinder mould?

c. Should the vat bottom be some other shape than that of a circle; or perhaps have a contour such as an ogive, etc.?

d. Should it be possible to vary the clearance by means of a breather type mechanism or simulate such a variation by means of dampers and similar devices?

e. Should the contour or clearance be different for slow-stock slow-speed operation as compared to free-stock high-speed operation? What would the difference be and how can one decide this difference with the answer in definite dimensions in inches?

f. If a given contour is proper for a given set of conditions on a counterflow vat would it be necessary to change it if the vat be converted to a uniflow type? If so, why?

g. Assuming that a preponderance of mills have conditions that will still permit granular materials composed of sand, bits of glass, particles of metal, etc., to come through the stock, should consideration be given in vat design for a definite sand pit so located that both water turbulence and gravity would cause it to lodge in the intended place? Or, should all vat designs be based on the premise that the paper stock, or the stuff from which the board is made, is completely grit free?

5. *White Water Ports.*

The least number of ports that can be considered on any vat is perhaps two. One set on the fan pump suction and an extra one to take care of the overflow via the outside column, the latter usually being equipped with a movable gate or series of stocks to control the inside water level. There may be vat types that require additional ports for auxiliary apparatus.

a. Why are most of the older fan pump suction port areas and conduits about as small as can be conceived to require high water velocities?

b. Should consideration be given to air and foam release on the fan pump suction, ports or conduits?

c. Is it true that the term fan pump suction really means that the fan pump actually sucks the water out of either or both ends of the mould, or is it true that the water flows out by gravity in all cases where the fan pump sets below the bottom of the vat and that this water behaves about the same that water normally behaves elsewhere on the face of the earth?

d. In order to insure level sheet conditions in terms of density and wet caliper, shouldn't the fan pump suction ports be located both on the front and back of the vats rather than just one side alone? Wouldn't this same consideration hold true so far as the overflow column port is concerned?

6. *Cylinder Mould Spokes.*

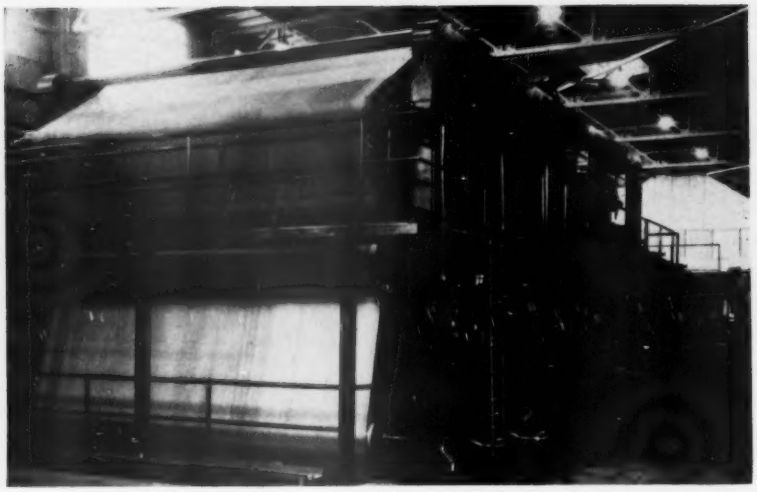
Many attempts have been made to make so-called spiderless cylinder moulds. The absence of a supporting spoke requires a compromise in terms of making either the longitudinal bars or the outer mould structure correspondingly stronger to make a stable structure. The compromises thus required oftentimes interfere with the hydraulic action both within and without the cylinder.

a. What is the reason that so many cylinder moulds, now in operation and often those now being built at the moment, are equipped with a multitude of rather small cross-sectional spokes of a shape, so that when viewing the cylinder from the end it gives one the impression that he is looking over a herd of elk or reindeer? In other words, what is the sense or reason in back of the gobbledegook crooked spoke design that has been used in the business for so long?

b. Why shouldn't the plain, simple elliptical cross-sectional spoke with the long axis in the direction of travel be used in order to cut down the terrific turbulence and batting of air into the water inside the cylinder? Could it be that those who operate at the higher speeds are the only ones who recognize this apparent fault in spoke design?

c. Can anyone conceive of a spokeless or spiderless type mould without compromising the cylindrical frame design of the mould in such a way that it will interfere with drainage or formation, and without substitution of a series of rollers or other type of mould support that is required to run in relatively gritty circumstances with the resultant high maintenance?

d. Is it possible that a few spokes, or say the minimum spokes required for structural stability, may be more proper than a spokeless mould insofar that at least for high-speed operation that formation is enhanced slightly by the so-called "pump-up" on the inlet side and "draw-down" on the opposite inside the mould?



WET END OF THE ALTONIAN—No. 4 at Alton Box Board Co., one of the largest and biggest producing cylinder machines, which is discussed in this article. Drawings by Mr. Hollis. This view shows cylinder moulds, 200 in. wide top felt and Alton-designed press section. Each of seven moulds weigh 22,000 lbs.; each vat circulates 13,500 gals. of water continuously; moulds are suction type, 5 ft. diameter, each electrically-driven and motors synchronized; vats are all-metal.

In other words, is a spokeless or spiderless mould the real answer?

7. *Type, Size and Spacing of Mould Bars.*

There are all sorts of conceptions regarding type, size and spacing of mould bars. If cylinder mould is not structurally stiff it will go egg-shaped by buoyancy by virtue of its position in the vat and likewise by the loading of the couch roll. The resultant deforming motion will cause destruction of the structure and may become one of the factors causing poor wire life.

a. Should the bars be round? Should the bars be tear-drop shaped? Should the bars be purely rectangular? Should the bars be rectangular with a steeple top on the winding wire edge?

b. Should the bars if they are not circular be placed radial toward the centerline of the mould? Should the bars be given an angular displacement with the idea of helping to pump water from the outside to the inside of the mould? If such angularity is employed, what should be the pitch and at what mould speed in lineal feet per minute are they most effective, and at what speed would they cause trouble, if any?

c. Should the mould be made up with a large number of small bars or a small number of large bars? Why?

d. Assuming that red brass or any brass composition made of copper and zinc is about the worst material that can be used as far as long-life is concerned on account of de-zincing, then what is the most preferable metal from which bars should be made? Stainless steel, what types? Monel, what composition? Rubber-covered iron or steel?

8. *Type and Mesh of Cylinder Cover Wires.*

Cylinder mould cover wires are rather standard in this country. We are in the habit of speaking of, say, a 40-mesh outer facing. This is not literally true in many cases as the actual wire as received when purchased for this purpose will be 40x36 with wire diameter of 0.105". This being particularly true on the finer meshes.

a. Should the cylinder have both an under face and an outer face?

b. Should the metals of the under face and the outer face be the same or can the under face be of one material and the outer face be a different one?

c. Should the under face be of a higher-priced long-life metal and the outer face be of a cheaper-priced short-life metal?

d. What outer face wire metals will result in more lodging and sticking of chewing gum, waxes, tars and asphalt more, or do all of the metals act alike in this respect?

e. Assuming that it is better to braze the facing joint rather than sew it, what metals, although they satisfy all other requirements, are difficult to braze?

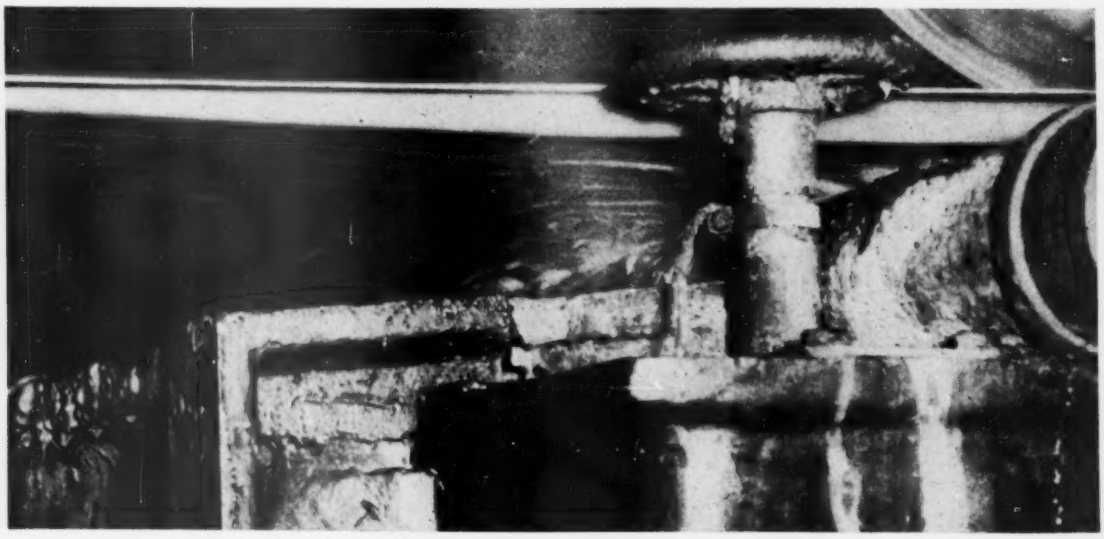
f. Should the outer face be of a real fine mesh in order to trap all fibers or should it be of a coarse mesh, or should it be of a mesh corresponding to a compromise, many factors considered? What are these factors?

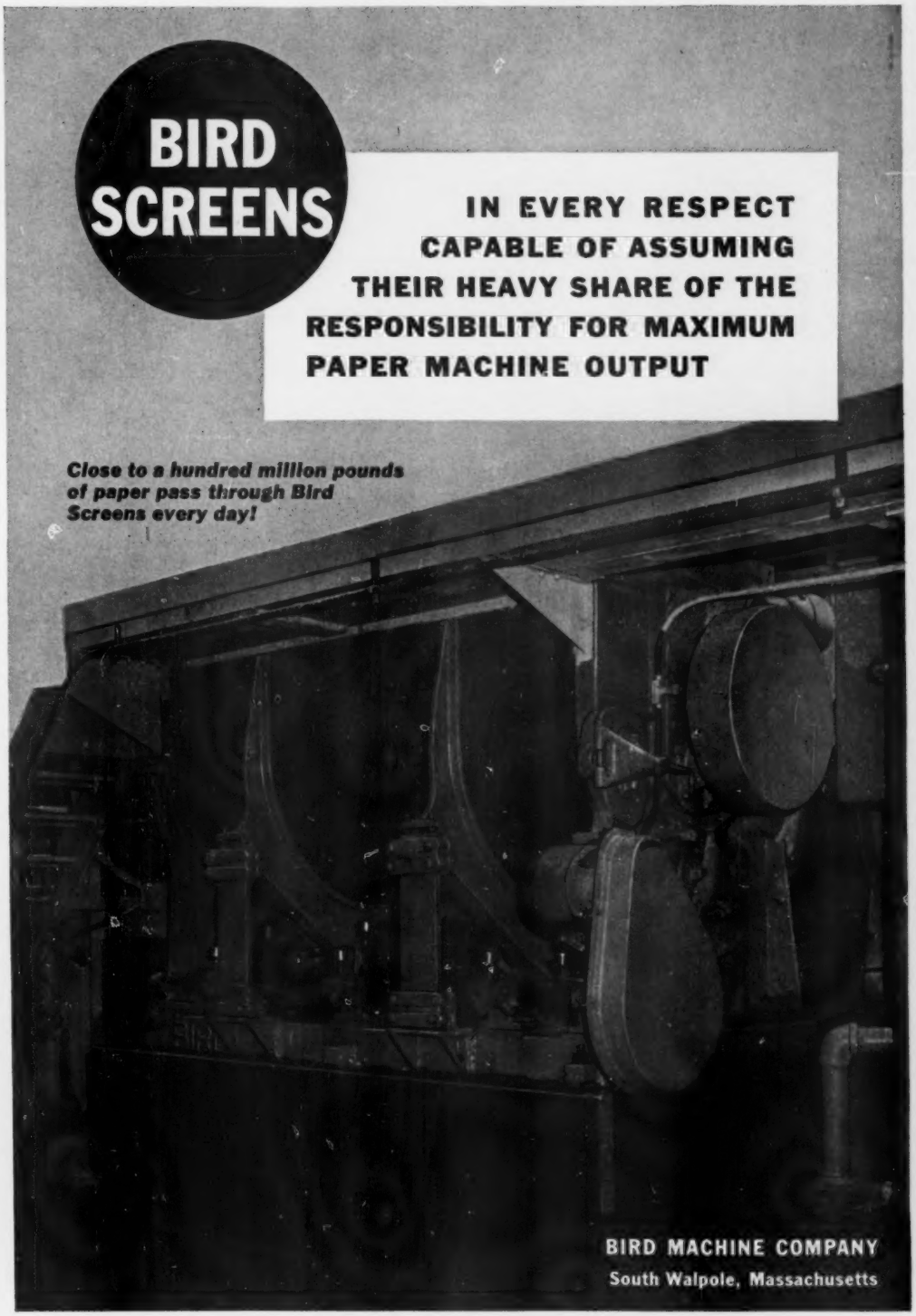
9. *Bottom Felts.*

It is assumed at this point that in most cylinder machines the felt picking up the sheet in the mould is termed the "bottom" felt. Insofar

(Continued on Page 104)

IN ARTICLE OVER YEAR AGO ON ALTON BOX BOARD CO., we published this unusual closeup of No. 7 Vat on the No. 4 Beloit Machine—the Altonian, which attracted considerable attention. Shows water flying to left as machine runs at 600 fpm. Normally it runs at 350-550 fpm. for heavy to lightweight kraft linerboard.

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Have Fun With Your Friends ---
SCHOOL DAYS HERE—TRY OUR QUIZ

September, as every schoolboy knows, is the month school begins. This being so, John H. Arnold, editor of *The Hammermill Bond*, employe publication at Hammermill Paper Co., submitted to us this very timely quiz on paper mill terms, which he has concocted in one of his buoyant moods. Unlike school exams, however, we think you'll find this quiz a lot of fun—as well as educational. Listed below are 30 incomplete paper mill terms —common paper mill terminology that should be familiar to almost everyone who reads PULP & PAPER. The object is to fill in the missing letters in each case by adding a complete word wherever there is a blank space. Take No. 1, for example:—T.....S.....ENCY. Add the complete words "ran" in the first space and "par" in the second and we have the term "transparency"—which is easy enough to see through. The descriptions following the terms are Mr. Arnold's ideas on how to aid you in completing the words. A score of 23 or more completed and correct is good, 18-22 is fair. A score of less than 18 indicates that you need to brush up on paper mill terminology. Here's wishing you luck—don't peek at the answers until you've finished the quiz!

(The answers are on Page 98)

(Answers based on the American Paper and Pulp Association's "Dictionary of Paper" and "A Dictionary of Paper and Paper-Making Terms," by G. J. Labarre)

1. T.....S.....ENCY—This one is easy to see through.
2. S.....S—You'll have to scratch to complete this.
3. W.....LES—These certainly don't look good on women or paper.
4. SL.....—Boy, do golfers hate to do this!
5. D.....DY—Oh, this is a fine one!
6. D.....LEX—Where two can live at a flat rate.
7. .....ER—To complete this one requires an untruth.
8. AD.....SIVE—Don't let this one stick you.
9. C.....S—Digesters wouldn't be much good without these.
10. APR.....—Don't let your wife get one of these on you.
11. C.....—Happens to youngsters in puppy love.
12. DU.....—A duke wouldn't be happy without one.
13. .....L—Looks good on women but not in paper.
14. K.....TS—This will get you all tied up.
15. C.....—This machine's a real cut-up.
16. .....ESTER——Your stomach is one of these.
17. .....ER—Where paper making proper really begins.
18. CLO.....—Lady Godiva did very well without this.
19. UN.....ED—Still a brunette.
20. J.....D.....—The river that Joshua led the Children of Israel over.
21. ....CE—Paper has to have this to sell.
22. .....L.....ESS—What we strive for in good housekeeping.
23. .....DR.....IER—This end is all wet.
24. DI..... .....D—What every single girl hopes for.
25. .....SABIL.....Y—Where poor typists are concerned, this is a must.
26. .....CT.....—Is there one in the house?
27. .....N.....G—There's a lot of this in hot weather.
28. GU.....O.....E—An instrument for trimming paper—and necks.
29. RE——TI.....—A good memory is a necessity here.
30. F.....I.....G—What you're now doing to this quiz.

"THE DICTIONARY OF PAPER"—$6.50 per copy—Second Edition, 1951, with 393 pages jam-packed with definitions of pulp and paper properties and terms is available from AMERICAN PAPER & PULP ASSN., 122 East 42nd St., New York 17, New York.

For our contribution this month to this column of fantastic stories in pulp and paper mills we are indebted to Albert E. Bachmann (shown in picture), vice president and mill manager of Missisquoi Corp., whose mill at Sheldon Springs, Vermont, makes fine cardboard, postcard, tag board, bristol board and and groundwood specialties on two cylinder machines. Mr. Bachmann is widely known in technical circles, and for many years has been a leader in the Technical Association, having been its vice president in 1948-1949 and president, 1949-50. He has made many serious contributions to the industry, in recent years having taken leadership in efforts to develop new techniques for cost accounting, a favorite subject of his.

This is not a serious contribution—and Al Bachmann says his stories are true, as well as being fantastic, which is more than Baron Munchausen could say of his. Few men in the industry could be any better qualified than Al Bachmann to recollect happenings when technical men, as we know them today, were first introduced in the mills.

We are very happy to forward to Mr. Bachmann our usual $5 honorarium for having his contribution accepted in the Machinetender Munchausen series. We invite any of our readers to try their hand at story-recalling or telling, and the stories needn't have any semblance to the truth. Send yours to PULP & PAPER, 71 Columbia St., Seattle 4, Wash., or any of our other offices.

Here's Mr. Bachmann's hair-raising tale:

"Some of the receptions that greeted the early technical men in the industry were rather rough, to say the least. Back in those days, the reaction of the barefoot machine crews to the advent of a visitor invariably evoked a standard suspicious 'Who is that so and so?' And it applied even more forcefully to technical men.

"One time a technical man just out of college approached a machinetender in a critical tone of voice and asked him what some felt marks on the sheets were. The machinetender said, 'Why, you so-and-so, those are rabbit tracks. Just go down and see if there isn't a rabbit running up and down on the wire.' This is indicative of some of the friendly teaching the embryo technical man received, sometimes caused, of course, by his own superior attitude.

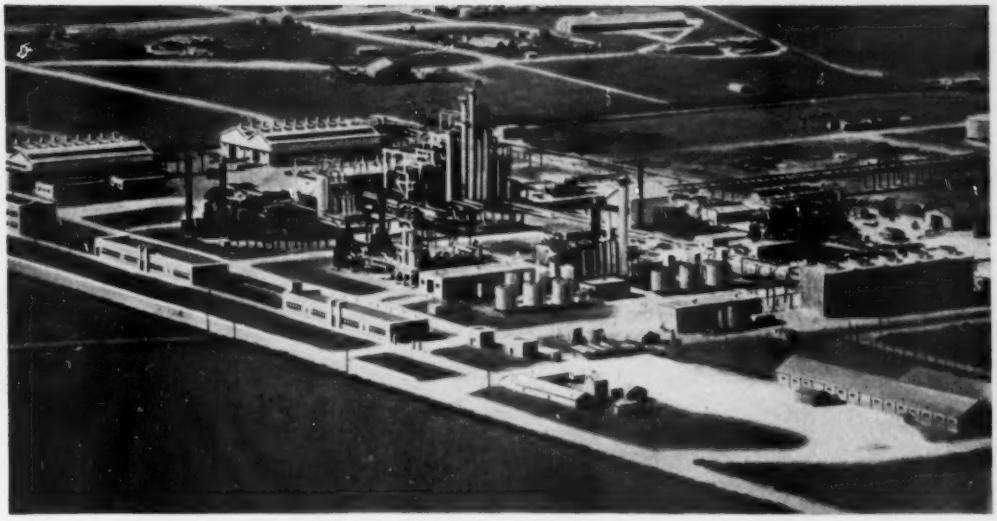
"Another actual occurrence to a paper tester, who had previously worked on the machines and who happened to be a resolute soul, illustrates what measures the technical men had to resort to in order to defend themselves.

"In this machine room the crew indulged occasionally in the playful habit of throwing balls of wet broke at each other, some of which occasionally had a nut enclosed in their center as a core, and often any malice was quite intentional.

"The tester usually sat with his back to the machines as he plotted his weight and moisture tests. On one occasion a wet broke missile just flew by this particular tester's noggin. The tester, being a more resolute soul, as we explained, promptly picked up the wet broke, went over to the calendar stacks and promptly threw it into the stacks, plugging them most effectively.

"'All right, you so and so's, now you can get to work,' he shouted to the assembled motley machine crew.

"Needless to say, he was not bothered any more with missiles flying by his head while doing his work. They say that that event marked a memorable turn in the history of the industry and from that day forward, technical men spoke in deeper, firmer tones, and were even known to grow and show hair on their chests.



Overall View showing new facilities . . . Ethylene Plant, Ethanol Plant and Isopropanol Plant

THE GIANT *of* GRANGEMOUTH

The British Petroleum Chemicals Ltd. plant at Grangemouth, Scotland, will supply the British Isles with a diversified line of important industrial chemicals and chemical intermediates derived from a crude petroleum stock. It was designed by Stone & Webster Engineering Corporation and built under the supervision of E. B. Badger & Sons Co. (Great Britain) Ltd.

STONE & WEBSTER ENGINEERING CORPORATION

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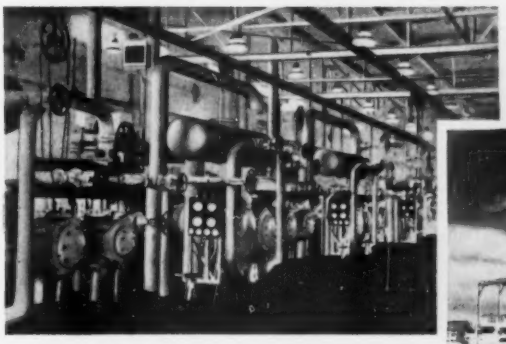
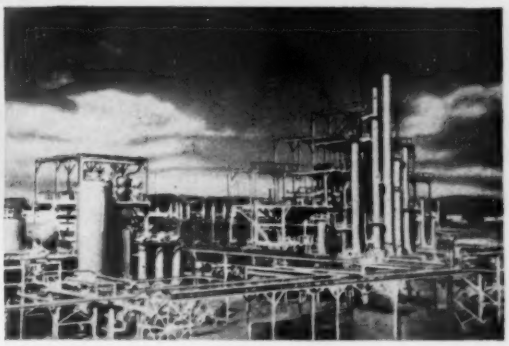


Compressor House — Interior

ETHYLENE PLANT
Cracking and Fractionating Structures



C. W. "Whit" Morden, Engineering Genius, Dies

Charles Whitney Morden, president of Morden Machines Co., and one of the engineering geniuses of the pulp and paper industry, whose greatest contribution was in improved stock preparation, died suddenly of a heart condition at his residence in Portland, Ore., July 23. He was 63; was born Jan. 12, 1888, in that coast "City of Roses" when it was a frontier town.

Many of his friends in the industry saw "Whit" Morden for the last time at the national Superintendents Convention in Portland in late June.

Mr. Morden graduated from Worcester, Mass., Polytechnic Institute in 1910. He joined Crown Willamette Paper Co. (a predecessor of Crown Zellerbach), starting what was to be his lifetime work in the paper industry. He was with Crown 17 years at their Camas, Wash., and West Linn, Ore., mills, his last position being assistant resident manager in their Portland headquarters office.

After leaving Crown in 1927, he began the development of stock preparation equipment. In 1931 he founded the Morden Machines Co., for carrying on development of the Morden "Stock-Maker" and later, the Morden "Slush-Maker," units of which have helped to modernize mill operation in many countries around the world.

Mr. Morden is survived by his widow, Ada, and his son, R. Burke Morden, who was associated with him as vice president of Morden Machines Co., and will carry on as head of that firm.

Steenberg, Swedish Authority, To Address U.S. Meeting

DR. BORJE STEENBERG, world famed authority on fibers, who will tour U.S., addressing paper industry groups.

Dr. Borje Steenberg, one of Sweden's outstanding authorities on pulp fibers and paper testing techniques, is planning an extensive trip in the United States. He is director of research, Paper Technology Department, Swedish Forest Products Research Laboratory, Stockholm.

First scheduled address is before a big Lake States TAPPI section sponsored meeting on the evening of Thursday, Sept. 20, in Appleton, Wis. The Legion hall, Conway Hotel, or some other suitable site, will be chosen and arrangements are being made by Dr. Harry Lewis, research associate, the Institute of Paper Chemistry.

Dr. Steenberg will lecture on the strength of cellulose fibers in paper sheets at seminars for young employes in the Pacific Coast industry—one on Sept. 24-25, at the Multnomah Hotel in Portland, Ore., the other on Sept. 27-28, at the University of Washington. Coast TAPPI sponsors these seminars with Prof. Joseph McCarthy of the U. of W. in charge, and coast mills send groups to either of the two-day sessions and assist in defraying expenses.

Dr. Steenberg will address a regular Coast TAPPI dinner meeting at Bellingham, Wash., Wednesday, Sept. 26,, Eric Ericsson, coast chairman and technical director at Puget Sound Pulp & Timber Co., presiding

John McEwan, assistant research director, Pulp Division, Weyerhaeuser, will be moderator at an afternoon technical session at Bellingham, which will bring forth various new ideas for saving sulfur, now in acute short supply in the sulfite industry. Dr. McEwan is heading up a national survey of sulfur savings methods for the entire pulp and paper industry, and therefore should have some valuable material for the meeting.

Dr. Steenberg's other dates in the U.S.:

Wednesday, October 3—Before Ohio TAPPI section at Hamilton, Ohio.

Friday, Oct. 5—Before New England section at Holyoke, Mass.

A tentative date is for Oct. 4, before the new Erie section at Cleveland, O., probably in the Hickory Grill there.

Thumbnail sketch of Dr. Steenberg:

BSc., MSc. Ph.D. in physical chemistry, Stockholm University. Head of Dept. Theoretical Chemistry, Royal Inst. of Technology, Stockholm, 1943-45. Dir. of Res. Paper Techn. Dept. Swedish Forest Prod. Research Laboratory since 1944. Head of Dept. of Paper Technology, Royal Institute of Technology, Stockholm, since 1949. Dean of Graduate School of Chemistry, Royal Inst. of Techn., since 1950. Member of several European and U.S. scientific organizations, including International Union of Chemistry, Section of Cellulose and Paper. Has about 50 published papers on X-ray chystallography, adsorption, chemical analysis, paper technology.

Hobbies: Skiing, mountaineering and classical music.

NEW MILL OF CONTAINER CORP. OF AMERICA

This recent view (above) of one of the newer operations of Container Corp. of America strikingly illustrates the advanced industrial architecture at the Fernandina, Fla., mill of the big container organization with headquarters in Chicago. F. J. Sauer, Vice President at Chicago, is in charge of the Fernandina operation and Manager of Container Corp.'s Pulp Department.

The interior layout is in keeping with the company's theory that such a plant should be more than merely a "housing" for a board machine and auxiliary equipment. Rather the Fernandina mill is a "home" for employes and machinery in association—a producing industrial family, so to speak. The functionally designed office building adjacent is in keeping.

Such ideas as the above, as well as CCA ideas in other departments, for example their unusual advertising campaign featuring abstract symbolization of the 48 states seem definitely of practical value. For the first quarter earnings of Container this year were more than double the like period of 1950—$4,745,000 against last year's first quarter of $2,127,000, resulting in per share common stock earnings of $2.35 as compared with $1.02 in 1950.

C. R. Hunsicker is General Manager and R. E. Phinney is Plant Manager at Fernandina.

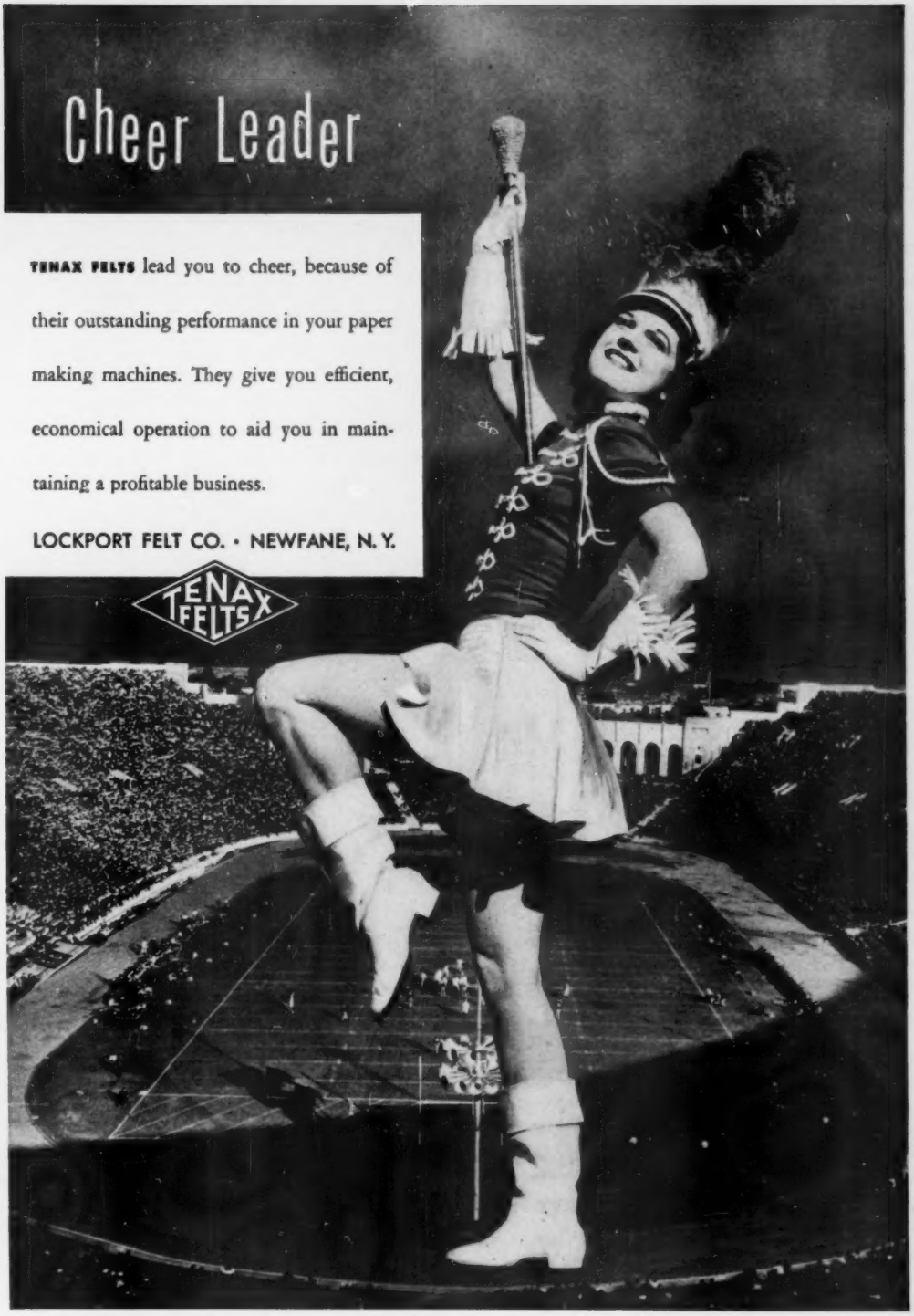
An advertisement in PULP & PAPER is ALWAYS WORKING—in every state and every region where pulp and paper is made in North America and in 40 countries around the world!

Cheer Leader

TENAX FELTS lead you to cheer, because of their outstanding performance in your paper making machines. They give you efficient, economical operation to aid you in maintaining a profitable business.

LOCKPORT FELT CO. • NEWFANE, N. Y.

TENAX FELTS



NEWS IN BRIEF • • • AND BULLETINS

ACQUIRES MILL SITE AT JESSUP, GA.

Despite previous denials of intention, Mengel Co., Louisville, Ky., with converting plants at Winstom-Salem, N.C., New Brunswick, N.J., Fulton, N.Y., and Nashville, Tenn., has announced acquisition of 500 acre site near Jessup, Ga., for $20,000,000 paper board mill. Announcement was made by company president, A. A. Voit. Initial unit will employ 400.

H. & W. ADDITION TO START UP

Hollingsworth and Whitney Co, Mobile, Ala., expected to put final stock over the wire about mid-September for its new mill at Mobile, providing a 50% increase in production with new Rice Barton machine.

HOPES FOR MILL AT JUNEAU, ALASKA

Ben B. Mullen, son of a Juneau banker, who was formerly identified with Belgian rayon and American interests who hoped to be able to bid for Forest Service timber around Sitka, Alaska, for a dissolving pulp mill, is now interested in a Juneau project, where the Forest Service has another timber allotment ("A Unit") all laid out and open to schedule for auction sale. Mr. Mullen said his new Alaska Cellulose Co. is in "pre-organizational" stage and is banking on defense loan on account of defense need for dissolving pulp. Proposed site is Auke Bay, 15 miles by highway from Juneau, which Mr. Mullen describes as one of best in Alaska. Would log initially just 10 miles from mill near Young Bay. A 200-ton plant, later upped to 400-500, is figured to cost $30,000,000.

FLINTKOTE ADDITION IN CALIFORNIA

Pioneer-Flintkote Co, Los Angeles, is modernizing its roofing paper machine, by installing Westinghouse sectional drives, 11 in all, each driven by 5-hp. variable speed motors.

S. D. WARREN ON SCHEDULE

In spite of material shortages, S. D. Warren Co. hopes to complete its $4,000,000 improvement program in 1951 on schedule, according to George Olmsted, Jr., president. The company was recently granted a certificate of necessity for $3,612,000 for adding to its pulp facilities at Cumberland Mills, Me.

LESAVOY BUYS GENERAL PAPER CORP.

Pennsylvania General Paper Corp., Coatesville, Pa., manufacturer of industrial paper toweling and cable wrapping, has been purchased by Lesavoy Industries, Inc., New York.

NEW WOOD SYSTEM FOR BROWN CO.

Complete remodeling of the wood handling system of Brown Co., Berlin, N.H., has begun under the direction of Sam Allen, project engineer. The new system will include three new barking drums housed in a new steel and concrete building, and a new 450-foot wood unloading conveyor. Wood will reach the conveyor from a hydraulically-operated "truck tilter," said to be the first of its kind in the country.

TO BUILD BAG PLANT IN CANADA

St. Regis Paper Co. (Canada), Ltd., will commence construction at once of a multi-wall bag plant at Dryden, Ontario, according to Thomas H. Cosford, vice president and managing director. The new plant will replace one leased from Dryden Paper Co. It will provide a capacity three times that of the present plant.

NEKOOSA MACHINE BY PUSEY-JONES

New paper machine is the major piece of equipment in Nekoosa, Wis., mill program of Nekoosa-Edwards Paper Co. It is being built by the Pusey & Jones Corp., to go into production on Aug. 1, 1952. Capacity from 75 to 150 tons daily, depending on grade. Roughly 2½ times greater than the capacity of any present Nekoosa-Edwards machines. Among grades to be run are Army wet strength map bond, writing papers, and base stock for treated food protective papers.

NEW OHIO PLANT ADDITION

A new $75,000 plant addition has been completed at The Crystal Tissue Co., Middletown, Ohio, providing shipping and storage facilities and added manufacturing and converting operations.

BIG YEAST ORDER AT RHINELANDER

One of the largest orders for waste liquor torula yeast ever booked was received in late July by the experimental sulfite liquor treatment at Rhinelander Paper Co. It came from one of America's largest pet food manufacturers.

PROMINENT IN PULP AND PAPER—COAST TO COAST (left to right):
ISA D. WALLACH, V.P. and Director of Gottesman & Co. and Central National Corp., elected to newly created office of Executive V.P. of Eastern Corp., pending election of a President to succeed Clyde B. Morgan, who became President of Rayonier. Mr. Wallach has been a Director of Eastern Since 1947. Eastern operates two mills in Maine; makes Atlantic Bond, business and household papers.
R. H. R. (Bob) YOUNG, who joined Pacific Mills, Ocean Falls, B.C., in 1922, as a machine worker and has been Manager of Manufacturing with headquarters in Vancouver, B. C., since 1946, has been appointed Vice President in Charge of Manufacture. Soon after graduation from Northwest College of Law, Mr. Young worked in the West Linn, Ore., mill of Crown Zellerbach, parent company.

LYLE LANG (left), who has been appointed Acting General Superintendent of the big Bowater's Newfoundland Pulp & Paper Mills, Corner Brook Nfld., one of world's largest—making 1,000 tons of newsprint a day. Is brother of Lloyd "Curly" Lang of Green Bay Paper & Pulp, Green Bay, Wis., and Stuart Lang, Marinette Paper, Marinette, Wis. HAROLD L. Jamieson (right), promoted to Acting Sulfite Supt., at Corner Brook. He had been Asst. Supt., came from Restigoucho mill in Atholville, N.B., where he was Chief Chemist. Corner Brook makes 325 tons of sulfite daily. A. R. STANFORD was appointed Assistant to Mill Manager at Bowater's.

JOSEPH E. BRADBURY (left), whose promotion to Manager of the Alloy Sales Section of Crane Co., Chicago, in the past year was of special interest to pulp and paper industry because his section is especially interested in mill uses of stainless and alloy valves, etc.
MANUEL DEL CASTILLO, JR. (right), head of import and export firm of that name, has moved to new headquarters in Mexico City to 122 Juanacatlan Ave. During past seven years he has represented E. D. Jones & Sons, Appleton Machine Co., Nash Engineering, Fitchburg Screen Plate, Bird Machine, and other lines. He was with the San Rafael Paper Co.

IMAGINE...

America without paper!

No more paper towels! Not even disposable tissue of any kind! Think how disruptive *that* would be to America's mobilization . . . to millions of U. S. homes . . . to every school child, housewife, defense worker . . . and to the Armed Forces themselves. From paper napkins to industrial tissue . . . a vast range of paper products have become essential parts of our economy . . . and contribute to the nation's health and security. Thanks to tissue, for example, America no longer has to put a cold in its pocket. Epidemics are reduced, production time is conserved. *So don't take paper for granted!* Use it wisely . . . protect its production . . . to keep America strong.

America depends on PAPER

PREPARED IN THE PUBLIC INTEREST BY BELOIT IRON WORKS, BELOIT, WIS.
MAKERS OF HIGH-SPEED, HIGH-PRODUCTION PAPER MACHINERY SINCE 1858

CAN YOU USE REPRINTS? This is one of a series of messages Beloit is running in *Fortune* Magazine to remind the U. S. of paper's importance. Reprints for bulletin boards and mailing available. Write to Beloit Iron Works, Beloit, Wis.

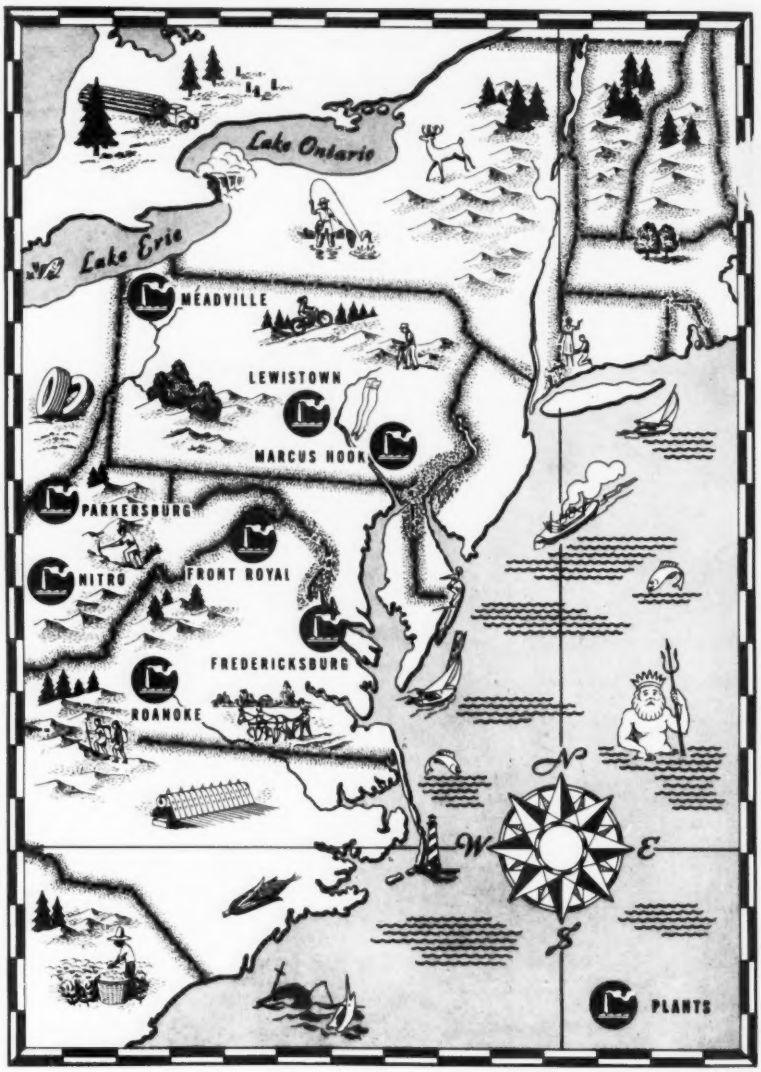
Alaska Mill Assured

FIRST PULP TO BE MADE BY 1953

HERE IS MAP SHOWING PLANTS OF AMERICAN VISCOSE CORP.

High alpha bleached woodpulp from Alaska spruce and hemlock—first pulp of any kind ever to be made in that territory—will be shipped to a number of these plants. Marcus Hook, first rayon plant in America, and Lewiston, Pa.; Parkersburg and Nitro, West Va.; Front Royal and Roanoke, Va., all produce by the viscose process. At Meadville, up near Lake Erie, acetate yarn is made. At Fredericksburg, Va., a cellophane plant is located. Any or all of these can use purified woodpulp (see our WORLD REVIEW NUMBER, 1951, page 134, which discusses the processes and uses).

Amvisco's products go into house furnishings such as draperies, rugs, upholstery; dresses; heavy duty tire cord; men's sportswear; cellophane packaging and other end products. Two-thirds of America's dresses now are made of rayon.



At long last. A pulp industry for Alaska is now assured—unless act of God or war lords or other unforeseen event intervenes.

It will be Alaska's first and only all-year around industry!

It will be at Ward's Cove, just six miles northeast of Ketchikan (cover picture), by water route or highway, on Revillagigedo Island ("Revilla," it's called).

Will make 300 tons daily of high alpha cellulose by 1953—525 tons per day by 1963.

Construction of plants begins late this fall, or early in 1952.

Operation will consist of pulp mill, bleach plant and chemical and heat recovery—one of two or three modern processes now in successful use elsewhere to be adopted.

Engineering work is well advanced; tentative drawings and plans completed.

The site has been sounded for foundations; surveying is done.

An area is cleared for homes and families of many of the 800 persons to be employed.

Ketchikan Pulp & Paper Co., of Bellingham, Wash., Lawson P. Turcotte, president, is to be owner and operator. In turn, Puget Sound Pulp & Timber Co. of Bellingham, and American Viscose Corp., of Philadelphia, which will convert most of the pulp to rayon, cellophane and other products, are principal equal owners of Ketchikan Pulp & Paper.

A $40,000,000 Project

Assurance of the mill is the biggest news this industry has heard in a long time.

It is certainly the biggest news for Alaska in many years—bringing its first all-year industry and better living and far greater wealth to the territory than anything the Indian aborigines, the Russian settlers, Lincoln's Secretary of State Seward, who bought the territory, all the cheechakos and sourdoughs, goldseekers and seasonal fishermen, lucky and unlucky, who won riches or ruin there, ever dreamed of.

Incidentally, it is a $40,000,000 project. The U. S. bought the whole territory for only $7,200,000 in 1867!

Two rapid-fire events brought to swift conclusion 30 years of effort by the U. S. Forest Service to bring a pulp or paper industry to the industry:

On July 27 in headquarters of the USFS, Washington, D. C., a final award of 8 billion bd. ft. (16 million cords) of timber, mostly high quality but small spruce and hemlock, in Southeast Alaska, to Ketchikan P&P. Signing of a firm contract beat the deadline for closing the USFS deal by just six days, and followed swiftly after the winning of a Certificate of Necessity from the National Production Authority.

In order to close the USFS deal, a satisfactory financial showing had to be made. Two important tax concession were factors in assuring a speedy financing of the Ketchikan company:

1. Amortization in 5 years of 65% of the investment in lieu of federal taxes, under the terms of the NPA certificate.
2. A 50% exemption up to 10 years in

. . . The Bowie Knife

Named for Colonel James Bowie of Alamo fame, this was the favorite knife of scouts and frontiersmen. With its rugged steel blade, from ten to fifteen inches long, the well-balanced Bowie Knife served equally well as a hunting knife or a combat weapon.

FAMOUS *Blades*

. . . Heppenstall Chipper Knives

have earned a reputation for clean-cutting during long runs in wood rooms from coast to coast. These solid alloy knives, made from Heppenstall's own electric induction steels, are carefully forged and heat treated to give maximum service. You can operate more hours between grinds, improve chip production, reduce production costs by standardizing on Heppenstall E.I.S. Chipper Knives *now*.

Heppenstall Company, Pittsburgh 1, Pa.
Sales offices in principal cities.

Heppenstall — *the most dependable name in forgings*

SIGNING OF LARGEST U.S. FOREST SERVICE timber sale ever made, assuring introduction of a pulp industry to Alaska, in F.S. headquarters in Washington, D.C., after NPA approved the project. LAWSON P. TURCOTTE (seated, left), President and Director of Ketchikan Pulp & Paper Co. of Bellingham, Wash., signing contract. C. M. GRANGER (seated, right), in charge of USFS National Forest Administration. Standing (left to right): WILLIAM H. BROWN, Treasurer and Director of the American Viscose Corp.; IRA J. MASON, Chief of USFS Timber Management Division; and ROBERT H. EVANS, of Seattle, Vice President, Director and General Counsel for Ketchikan Pulp & Paper Co. He is also Director and Attorney for Puget Sound Pulp, of which Mr. Turcotte is President.

territorial taxes, under terms of Alaska's property tax act.

Harold D. Cavin, chief engineer of both Puget Pulp and Ketchikan Pulp and builder of some of the biggest mills and mill units on the Pacific Coast and South, and Erik Ekholm, v. p. and general superintendent of Puget Pulp, met with Amvisco officials to speed up decisions on construction.

Plant Will Be "Showplace"

One thing seems assured. The first pulp mill for Alaska will most certainly be a "showplace"—a mill of latest permanent design.

The building and operation team is headed up by top-flight engineers of Puget Pulp, who already have made a worldwide reputation in this industry for the physical attractiveness and high efficiency of their plants. Witness to this fact are additions of recent years at the Bellingham mill—its waste liquor alcohol plant; new barking plant; paperboard mill; new bleach plant. Even going farther back, the 1937 mill they built at Bellingham still ranks among the most modern in the industry. Everything they have laid their hand to has embodied the very best in materials and latest in design. And so, Alaska and the industry can look forward to a model plant at Ward's Cove; in fact, the entire mill town will undoubtedly be most attractive and conducive to good living.

A forest service official was quoted in newspapers as saying a magnesia-base sulfite recovery system would be used; an NPA official was quoted as saying it would be a kraft process; PULP & PAPER was informed by Mr. Turcotte that the process would be announced later.

HAROLD D. CAVIN, Chief Engineer of Puget Sound Pulp & Timber Co., who drew up plans for new Ketchikan Pulp & Paper Co. of Alaska. He has also been Consulting Engineer for new Japanese mills and additions.

A Dream of Anderson and Company

The move to Alaska in its role as the management and operations nucleus for the new venture is carrying out a dream for the Puget Pulp & Timber Co. which was long held by its former late president, Ossian Anderson. Mr. Anderson, pioneer of the *market* pulp industry of the Pacific Coast, was one of the first men in this industry to envisage the important role of pulp as a world commodity and its importance to North America in national defense. It was primarily on the latter grounds—because the high alpha pulp can be made into gunpowder for the U. S. Army—that the NPA granted the certificate.

Puget Pulp was founded in 1929—now is the second largest sulfite mill in the world, with 370 tons daily production. Mr. Anderson's dream of selling its pulp in nearly every corner of the world has been substantially realized. He founded the company by acquiring small mill properties at Bellingham and Anacortes, but the company as it stands today is the creation of his management team. Today it is substantially the same, with few exceptions, to that which started with him. The Anacortes property was sold to Scott in 1940, a year before Mr. Anderson's sudden death in the prime of his life, in Vancouver, B. C.

In that year Mr. Anderson predicted a worldwide shortage of pulp after the war, and only this year, Mr. Turcotte has declared there will be a worldwide shortage as far as can be seen into the future, though there may be some ease-up in North America, particularly with more mills in Alaska and elsewhere.

Leading Personalities

Mr. Turcotte was secretary-treasurer when Puget Sound was founded. Fred G. Stevenot, of San Francisco, president between the Anderson and Turcotte terms, and now chairman, was a director. Mr. Ekholm, graduate of the Swedish Technical University at Katrineholm, has headed operations since 1929. Robert H. Evans, Seattle attorney, now counsel for Ketchikan P & P and its vice president, has been counsel and director for Puget since its start. Mr. Cavin, an ex-Hardy engineer and builder of the H & W mill in Mobile, supervised construction for Puget as consultant for nearly ten years, then joined the company as its chief engineer. Others have had longtime connections with Puget.

Pending the reorganization of Ketchikan Pulp & Paper, which was speedily being carried out as this issue went to press, the officers and directors were Messrs. Stevenot, directors; Turcotte, president and Evans, vice president.

With collaboration of three Amvisco di-

"Gratified and Delighted," Says Heintzleman

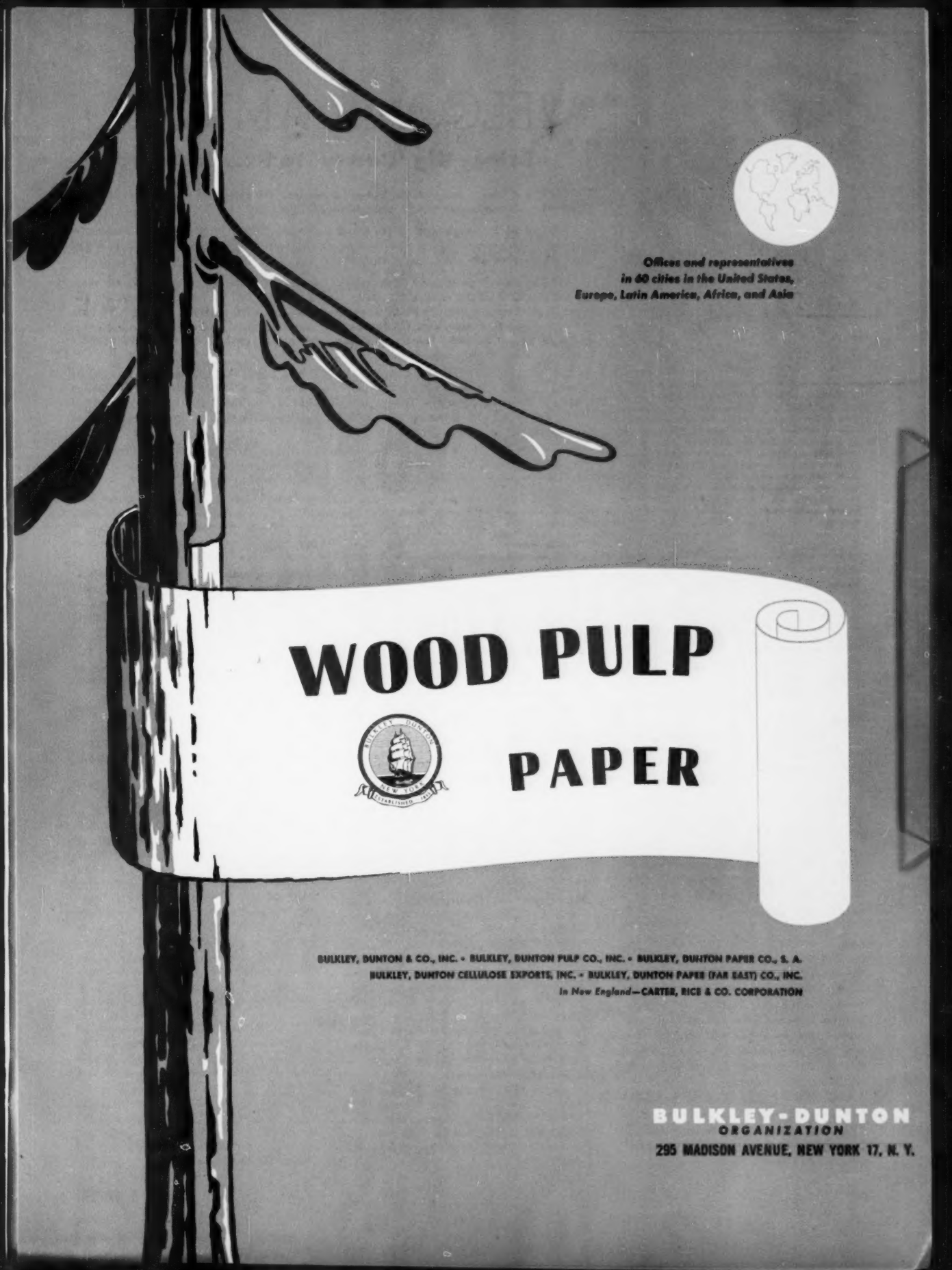
When the new pulp mill in Alaska was finally assured, PULP & PAPER flashed a wire to the one man who is more responsible than any other single individual (aside from the investors themselves) for bringing the industry to that territory. He is B. Frank Heintzleman, Alaska's "never-say-quits" Regional U. S. Forester, shown in this picture. We asked him how he felt about the good news.

Speaking modestly as a loyal Alaskan, Mr. Heintzleman replied, characteristically:

"*All of us here* are very much gratified and delighted that the pulp and paper industry has finally been extended to Alaska."

In the picture of the signing of the timber contract by Ketchikan Pulp & Paper and USFS officials, published on these pages, sent out from Washington, it appears that Mr. Heintzleman did not have the pleasant experience of being present for that climactic act. But we are sure everyone involved would freely admit the important role that he played.

For 30 years, he traveled widely, interesting possible investors, and though some were "sold" almost up to time to sign on the dotted line, only to back out, he never let this discourage him. (See our editorial comment, *page 35.*)



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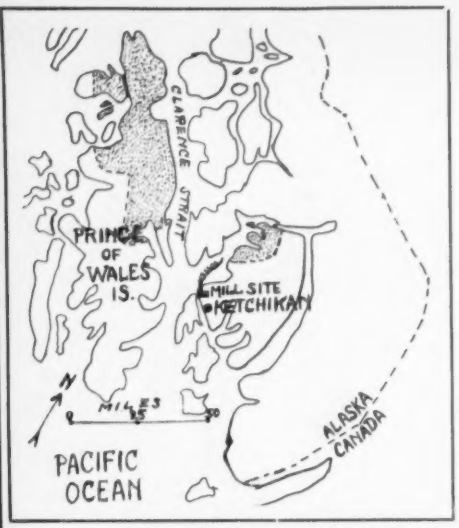

DARKENED, DOTTED AREAS ON THIS MAP constitute the Pulptimber Allotment made to Ketchikan Pulp & Timber Co. by USFS. The new company is assured sufficient timber for operation in perpetuity of a starting at 300 tons and building up to 525 tons daily production. The one and one-half billion cu. ft. in this area is being sold at prices adjustable after 1964, at intervals. The USFS has blocked off four more Pulptimber Allotment Units north of this one; ready to be similarly auctioned off to the highest bidder—one pulp and/or paper mill to each one.

rectors and officials—Dr. Frank Reichel, chairman and president; William H. Brown, treasurer; and John G. Jackson, attorney—the Ketchikan company heads carried through negotiations with the Forest Service leaders: B. Frank Heintzleman, Alaska regional forester; Lyle F. Watts, chief in Washington; C. M. Granger, assistant chief, and Ira J. Mason, chief for timber management.

Timber Deal

Provisions for conservation of the natural resources of the area was one of the major features of the sale. This includes handling of the timber on a sustained-yield cutting plan, safeguarding salmon spawning streams, prevention of pollution and preservation of scenic values.

The sale was on the basis of a 50-year cycle cutting contract expiring June 30, 2004 A.D., and the company agreed to pay 85 cents per 100 cu. ft. cut for pulp up to July 1, 1964. For trees intended for manufacture or sale in other forms (veneer logs or sawlogs) cut in the same period, it agreed to pay $3 per thousand bd. ft. for spruce sawlogs, $1.50 for cedar, and $2 for sawlogs of hemlock and other species. After July 1, 1964, and at subsequent five-year intervals, rates will be reappraised by the Forest Service, but will be in line always with rates on Puget Sound. The company already had made a $100,000 down payment.

Bulk of the timber is on the northerly portion of Prince of Wales Island. It is 75% hemlock and the balance mainly Sitka spruce with some small amounts of Alaska and western cedar.

WELCOME, AMVISCO!

Brings Big 'Dowry' to Pulp Industry

The marriage of American Viscose Corp. into the pulp and paper field gave this industry a considerable dowry from American business.

First of all, it brought with it the oldest and most important name in production of rayon in the country, and it also brought along a record of net sales and earnings which in 1950 reached all-time highs of $267,496,000 and $33,170,000, respectively.

With a production of over 200,000 tons in 1950, American Viscose produced more than one-third of the entire U.S. rayon output of 590,600 tons. This, too, was an all-time high for the industry and brought its consumption of woodpulp to over 450,000 tons. The movement of American Viscose into the manufacture of pulp is clearly indicative of its intention to retain its leadership in the expanding rayon field, and to insure its supply of woodpulp for this expansion.

American Viscose Corp. was founded in 1910 and began the first commercial production of rayon in this country at its plant at Marcus Hook, Pa., in that year. Production was by the viscose process. Today, in addition to Marcus Hook, the company has plants at Front Royal and Roanoke, Va., Lewistown, Pa., Nitro and Parkersburg, West Va., producing by this same process.

At Meadville, Pa., is a large plant the company has producing acetate yarn, while at Fredericksburg, Va., it has the second largest cellophane plant in the country which was acquired through the purchase of Sylvania Industrial Corp. in 1946.

Beyond these holdings and activities, it was announced late in 1950 that American Viscose was a partner with Monsanto Chemical Co. in the creation of Chemstrand Corp., and that a multi-million dollar plant for the manufacture of a new acrylic fiber would be constructed at Decatur, Alabama. This fiber, which is said to be closely related to nylon, is already in semi-commercial production at the Marcus Hook plant.

Control laboratories and engineering departments are maintained at each American Viscose plant, but a separate chemical research department has been established at Marcus Hook for fundamental studies to improve old fibers and develop new ones. This department employs over 125 scientists in its cellulose, viscose, yarn finish, physics and high polymer sections.

Dr. Frank H. Reichel heads this vast enterprise. One of the founders of Sylvania Industrial Corp. and its president at the time it was consolidated with American Viscose in 1946, Dr. Reichel was named as chairman of the board of Amvisco then, and later was elected president as well. His three vice presidents, who act as key men in running the organization, are: Frank H. Griffin, technical development; Harry L. Dalton, sales; and Gerald S. Tompkins, production.

Of interest in the woodpulp industry is the statement that ⅔ of a lb. of cellulose produces one lb. of acetate rayon, while it takes 1.06 lbs. of pulp for 1 lb. of viscose rayon.

First Alaska Mill

The Ward's Cove mill actually will be Alaska's second pulp mill. Way back on January 24, 1921, a little groundwood mill started up at Speel River, near Juneau. It was semi-experimental. The business following World War I closed it down.

Manager for Cyanamid

Sheldon T. Dahl was named West Coast manager of American Cyanamid Co.'s Industrial Chemicals Division and Plastics and Resins Division, the company announced Aug. 2. He now directs the two divisions' sales and production activities in the West Coast territory. Mr. Dahl joined the company as West Coast sales manager when his Los Angeles sales and distribution firm, the S. T. Dahl Co., was acquired by Cyanamid in 1948.

Supts. 1952 National

June 17-19 are dates for the Superintendents National convention in the Book-Cadillac Hotel, Detroit, next year. We slipped last month, stating they were in July—the association always meets in June.

Barrett & Yost

Barrett & Yost, a partnership by Ed Barrett and Charles Yost, who for a number of years have represented manufacturers to the Pacific Northwest pulp and paper industry, has been formed in Seattle. They have a new entire building, designed and built especially for them, at 5600—14th Northwest in the Ballard section of the city and invite industry callers.

Mr. Barrett went west from Chicago in 1941 for a Milwaukee firm. He holds a chem. eng. degree from Kansas State. Mr. Yost came from New Jersey in the mid-30's and has an M.E. degree from U. of Penn. For a number of years they had adjacent offices in downtown Seattle.

They represent Mixing Equipment Co.; Proportioneers, Inc.; Fisher Governor Co.; Schuette & Koerting Co.; Crosby Steam Gage & Valve Co. and W. H. Nicholson & Co.

Recently they took Earl Costitch, application engineer, and Milton Dykman, assistant chief engineer, from Mixing Equipment Co., Rochester, N.Y., on a tour of Pacific Northwest mills.

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for severe pulp mill service

Special Stainless Valve Stand Casting

Corrosion, heat and abrasion are *not* serious problems...*for the pulp mill that uses ESCO cast stainless and high alloy equipment.*

Into these castings goes a combination of design and metallurgical experience, supported by complete facilities for casting and heat treatment. Non-destructive testing, including X-ray, gamma ray and Zyglo are used frequently to check the structure of castings and assure uniformly high quality.

Resulting equipment gives prolonged service under adverse operating conditions with a minimum of production interruptions.

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Rayonier Seeks Mill Okay

Rayonier Incorporated has applied for a certificate of necessity which would give government approval to the building of a 250-ton pulp mill.

'The Rapids' Goes on Ammonia

Consolidated Water Power & Paper Co. has announced that—experimentally and for undetermined time—all sulfite pulp made at its Wisconsin Rapids mill will be cooked with ammonia base. This mill lists 8-digester capacity of 180 tons a day.

World Allocation Dropped

Proposals for allocation of wood pulp in the free world have been abandoned. The 27-nation International Raw Materials Committee made this decision in mid-August, but was still considering allocating newsprint. Data from governments disclosed critical kraft pulp would only be 1.3% short of demand.

Australia-New Zealand Impresses Experts

J. D. Haskell, Black-Clawson vice president, general manager of Dilts, and managing director of B-C International, Ltd., London subsidiary of Black-Clawson, and Robert T. Petrie, Pacific Coast manager of the Black-Clawson-Shartle-Dilts organization, met while on separate business tours of Australia and New Zealand.

They were very impressed with the pulp and paper potential in those dominions, based largely upon imported Monterey pine from the Carmel region of California, growing four times as fast in the Antipodes as it did in the United States. Some 200,000 acres already are planted in Australia and it is the basis for what promises to become one of the world's great pulp and paper industries in New Zealand. Over 850,000 acres of 14- to 24-year-old man-planted trees are growing in the northern Island of New Zealand.

Mr. Petrie complimented PULP & PAPER on its report of developments and possibilities in the Antipodes in its recent 1951 World Review Number.

Mr. Haskell, back in his Fulton, N.Y., home, said he was greatly impressed with the industry growth in Australia, particularly in the modernization program of Australia Paper Mfgrs., the biggest company, which has headquarters in Melbourne, and mills at Petrie, Botany, Maryvale, Broadford and Fairfield, making pulp, board, wrap, printing and specialties 300,000 by 1955-56.
300,000 by 1955-56.

Many items of Shartle stock preparation systems are going into these mills.

Mrs. Haskell and Mrs. Petrie accompanied their husbands. The Black-Clawson *Messenger* carries a story of the Haskell's recent trip to South America in the July issue.

J. D. HASKELL (left), of Fulton, N.Y., V.P. of Black-Clawson Co., and Gen. Mgr. of Dilts Machine Works Division, and ROBERT T. PETRIE (right), of Portland, Ore., Pacific Coast representative for the Black-Clawson-Shartle-Dilts on the Pacific Coast, met in New Zealand while on business tours in New Zealand and Australia.

Westinghouse Names Vice Presidents

Gwilym A. Price, president of Westinghouse Electric Corp., has announced election of E. W. Ritter, manager of a new electronic tube division, as vice president, and E. V. Huggins as executive vice president of the Westinghouse Electric International Co. foreign trade subsidiary.

Other Southern Construction and News

Promotion of a natural gas line to serve the Southeast, including three paper mills, has failed to secure enough users to provide an adequate sales volume for the project, according to the Atlantic Gas Gulf Co., Shreveport, La. The line would have been 1700 miles long. R. O. Wilhelmi, vice president, stated potential natural gas users who had signed with the company included Rayonier, Fernandina, St. Regis, Jacksonville, and St. Joe Paper Co., Port St. Joe, Fla.

FINAL DETERMINATION AS TO SITE of National Container Corp.'s new mill has been resting upon questions of effluent disposal and water supply. The company has acquired a 400 acre tract in Lowndes County south of Valdosta, Ga. The location is convenient to company forest land holdings. The plant has its certificate; would cost an estimated $21,000,000; employ 1,000 persons in woods and mill; and would produce 100 tons daily of kraft paper, kraft board, paper, pulp and shipping containers.

ADOPTION OF A PROGRESSIVE forestry program will be effected by The Mead Corp. to insure continuing supply for its new $23,000,000 mill on the Coosa River near Rome, Ga.

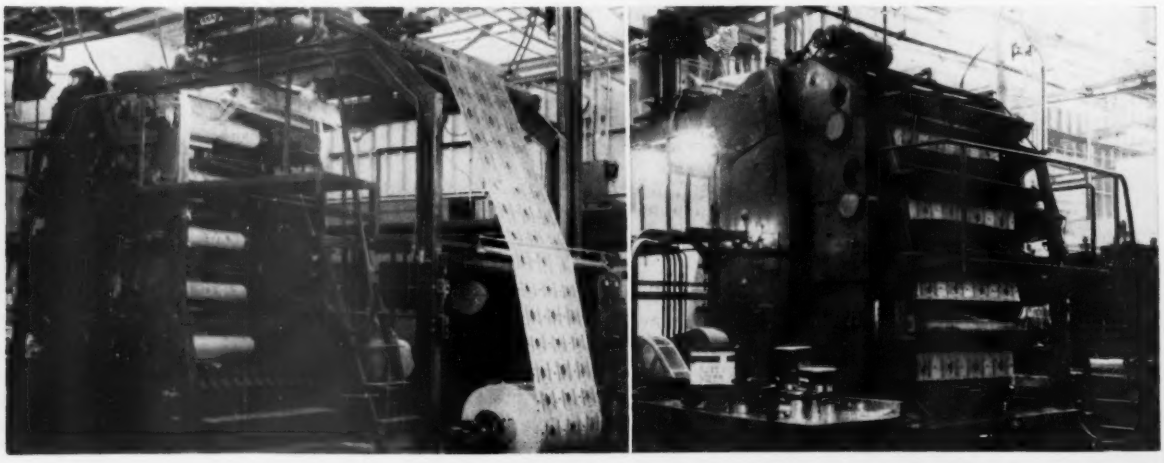
WHITE STAR PAPER CO., whose projected new mill at Prescott, Ark., received a certificate for $17,916,543, is still listed as "doubtful," according to Fred Dierks, of Dierks Lumber & Coal Co., Kansas City, Mo. The lumber company, owner of a million acres of forest land in Arkansas and Oklahoma, is the prime backer of the project, planning to use it for disposal of thinnings, tops, and woods improvement work pulpwood. J. R. Bemis, of Ozan Lumber Co., Prescott, Ark., is president.

AMERICAN SUGAR CANE LEAGUE, of New Orleans, is leading a movement to raise $30,000 for bagasse research. There has been considerable interest in Louisiana in possible development of an economic method for using bagasse for paper.

PRODUCTION OF RAMIE, used for textiles, fine writing paper, and laminated plastic fabric, has reached 2,000,000 pounds yearly in Florida. Newport Industries, at Canal Point, produced 700,000 pounds in 1947 and has been stepping up the yield steadily.

PRODUCTION OF SULFUR from sour gas is being effected by Shamrock Oil & Gas Co., in Moore County, Texas, according to R. S. Calvert, state tax controller. Phillips Chemical Co. is building a sulfur extraction plant in Ector County.

Two views of new Model RP 47 32 x 66 in. (five color) color press, manufactured by the Kidder Press Co., Dover, N.H., and installed at San Leandro, Calif., plant of Western Waxed Paper Co., Division of Crown Zellerbach Corp. The company also has a Kidder color press in Portland, Ore., plant. Kidder press shown above is powered with 50 hp. Reliance electric motor, and the all-electric, automatic tension, rewind and unwind, was also built by Reliance Electric & Engineering Co., Cleveland, Ohio.



THE CORRECT COMBINATION FOR SUCCESS—In addition to good instrument performance the success of this installation is also due to the willing and complete cooperation of the Brunswick Pulp and Paper Company with the Bristol organization in the engineering, installation, and operation of the control equipment.

"Outstandingly Successful Automatic Control"

Bristol Digester Control Gives Complete Satisfaction at Brunswick Pulp and Paper Co.

As reported by Brunswick, the results obtained from automatic control system include (1) saving in steam, (2) pull-over of liquor minimized, (3) ideal cooking schedule accurately and consistently repeated, (4) practically no maintenance required, (5) results fully satisfactory.

Like all Bristol control systems, this one is simple, adaptable. Operating men get familiar with it fast. Control panel units can be installed side-by-side to form a continuous panel for controlling an entire digester house, and can be enlarged to cover more digester.

Bristol Instruments Get the OK in Mills from Coast to Coast

Experience at Brunswick Pulp and Paper Company is typical of the performance of Bristol Recording Instruments and Automatic Control Systems in Paper Mills from coast to coast.

Bristol manufactures a complete line of automatic controlling, recording, indicating and telemetering instruments and component equipment for the Pulp and Paper Industry to take care of applications requiring from only one or a few instruments to those requiring extensive instrument control panels.

NEW SERIES 500 INSTRUMENTS ARE NOW AVAILABLE. Products of over 60 years of instrument experience, they are extremely simple in construction and will withstand the severest service. They require practically no maintenance—anybody can take care of a Bristol Series 500 instrument.

Bristol Has the Resources Needed to Give You the Best in Instrument Engineering

Bristol has developed techniques and facilities for handling even the most difficult and unusual control problems. Our engineers will relieve you of many worries by providing layout drawings and piping and wiring diagrams. We furnish panels in finished form with all internal piping and wiring complete. All you have to do is make main power and air-line connections. Our engineers stay with the job until operating satisfactorily.

Make use of Bristol resources. Write for Bulletins. THE BRISTOL COMPANY, 142 Bristol Road, Waterbury 20, Conn.

Quick Facts About Bristol Alkaline Digester Control System

Bristol Alkaline Digester Control System is used to automatically control digestion of Southern pine and Northwestern fir and hemlock in direct and indirect-steamed digesters, with either forced or natural circulation of both long and short cooks. *Installation requires no changes in digester equipment. It adapts itself to the digester, resulting in lower installation cost.* It is also adaptable to changes in operating conditions.

BRISTOL

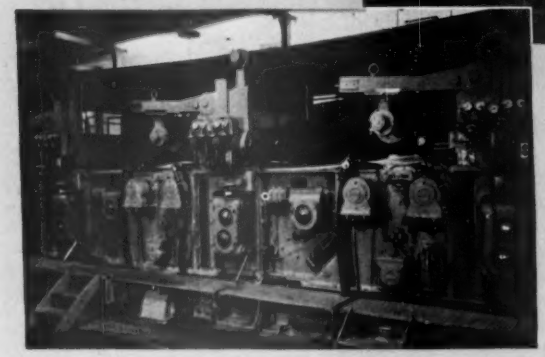
AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

SWEDEN LEADS THE WAY

Above, aerial view of the mill of A. B. Papyrus, Molndal, Sweden.

Below and right, close-up views of the new Cylinder Machine with Stream-Flow Wet End which started highly successful operation in October 1950.

The forming part of the new machine at Papyrus consists of four Vacuum Stream-Flow Vat Systems with vacuum cylinder molds, 48" dia. x 120" face, Flow Spreaders, Up-Flow Head Boxes, etc. A. B. Papyrus have a total of 13 paper and board machines in operation, making a tremendous variety of products, all of the highest quality.



European Papermakers turn to *Stream-Flow Vat Systems*

A new cylinder board machine with a forming part consisting of four Goldsmith Vacuum Stream-Flow Vat Systems started up in the mill of A. B. Papyrus, Molndal, Sweden, in October 1950. This machine makes the highest quality European type folding boxboards from sulphite and groundwood pulps with an MG finish produced by a Yankee Dryer. It makes a wide range of sheet weights, namely in caliper from .014 to .050

This is the second highly successful new machine to start operating in Sweden with Vacuum Stream-Flow Vat Systems during 1950. Stream-Flow Vat Systems are now also on the drawing boards for machines to be installed in France and in England.

When Papyrus selected Stream-Flow Vat Systems as the forming part of their new machine, their choice was based on a wide experience. Their satisfaction with the performance of this new machine is a just reward for their decision not to be content with second-best equipment.

Whatever your product may be – test liner, corrugating board, folding boxboards, high-grade boards or cylinder papers, felt or special products – Puseyjones Stream-Flow Wet End on your new or rebuilt machine will give you the assurance of better sheet quality, higher speed possibilities and furnish economies.

Write or call a Puseyjones engineer today.

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Fabricators & Welders of all classes of Steel & Alloy Products

Wilmington 99, Delaware, U.S.A.

One Man Bleach Plant

GOULD MAKES UP TO 130 TONS A DAY

By R. A. Premo
Technical Director, Gould Paper Co., Lyons Falls, N.Y.

When management of the Gould Paper Co. decided to install a continuous peroxide bleach plant, they determined that it would embody the last word in automatic control technique. This mill, located on the Black River in the foothills of the Adirondack Mountains, formerly produced newsprint, and was converting to the highest grades of groundwood specialties —such as paper suitable for books and magazines of the "non-slick" variety.

How well Gould succeeded is illustrated by the fact that the new plant is capable of bleaching 100 tons of groundwood, or 130 tons of sulfite or groundwood-sulfite mixture daily, with a single operator in attendance. Moreover, in addition to keeping the bleach plant running, this operator finds time to make necessary hourly laboratory tests on the bleach liquor and bleached pulp.

The bleach mixing room, incidentally, includes a continuous and completely automatic bleach liquor making system, the first of its kind ever installed. The only time additional personnel is needed is on startup which is handled by two men. As illustrated, all instruments and controls are located on a central panel.

Saving Time Alone Not Enough

While an automatic control system that would save sufficient man-hours to enable one man per shift to run the entire bleach plant was a big step in the right direction, the science of automatic control offered still more in the way of operating benefits. In a continuous operation such as this, there always exists the possibility of equipment failure at some stage of the process. The result of such a failure? Messy spillovers which waste stock and chemicals, and involve costly man-hours of cleanup time. What could be done to prevent it? The completely interlocked control system shown in the illustration, functions so that if any single piece of equipment fails every preceding piece of equipment is instantly and automatically shut down.

LESTER J. "Lefty" SMITH (left), Manager of Gould Paper Co., Lyons Falls, N.Y., and R. A. PREMO (right), Technical Director, who wrote the accompanying article especially for PULP & PAPER. Mr. Smith, member of a famous Wisconsin papermaking family, is going to Kalamazoo on Sept. 20 to discuss this system before the Michigan Division of the Superintendents Association.

Gould went a step further. Even though no breakdowns were to occur within the bleach plant proper, failure of subsequent refining or papermaking equipment could cause spillover of the bleached stock storage chest. To guard against this, an unobtrusive little Honeywell non-indicating pressure controller (Pressuretrol unit) functioning as an air purge type level controller shuts down the entire bleach plant and sounds an alarm if, at any time, the stock within the bleached stock storage chest closely approaches the "spillover" level.

What Makes the Plant 'Tick?'

The schematic drawing (published with this article) shows the parts played by various instruments in the operation of the bleach plant. For the sake of clarity and simplicity, no attempt has been made to include the electrical interlocked equipment, or the watchdog Pressuretrol unit just described.

An instrument (A), which continuously measures the level in the bleach liquor storage tank, automatically starts up the continuous liquor making equipment when this level drops below a preset value. This instrument, a pneumatic controller, actuates a Honeywell pneumatic-electric relay (B), which in turn energizes the sodium silicate and sulfuric acid proportioning pumps, starts up the epsom salt and sodium peroxide dry feeders, and opens the Honeywell water valve shown in one of the photographs.

As shown in the drawing, liquor-making equipment, in addition to the proportioning pumps and feeders, consists of an agitator-equipped stainless steel tank divided into four compartments. Water, sodium silicate and epsom salt are mixed in the first compartment, and the solution overflows continuously to the second compartment where sodium peroxide is added. Overflow from this compartment goes to a third where the addition of sulfuric acid completes the preparation of the liquor.

The fourth compartment serves as a sampling section, and feeds by gravity to a tile lined storage tank. As soon as the liquor in the storage tank reaches a preset level, instrument (A) shuts down the liquor-making system. Relay (B) has a slight differential to eliminate on-off cycling of the liquor making equipment which might otherwise result from small changes in the liquor level in the storage tank.

Controls Guard Cost and Quality

Beginning with two Honeywell non-indicating level controllers (C) on the groundwood and sulfite stockmeters, shown in another photograph, automatic controls continuously monitor every crit-

EQUIPMENT IN BLEACH PLANT AT LYONS FALLS; SMITH TO DISCUSS PROCESS AT KALAMAZOO

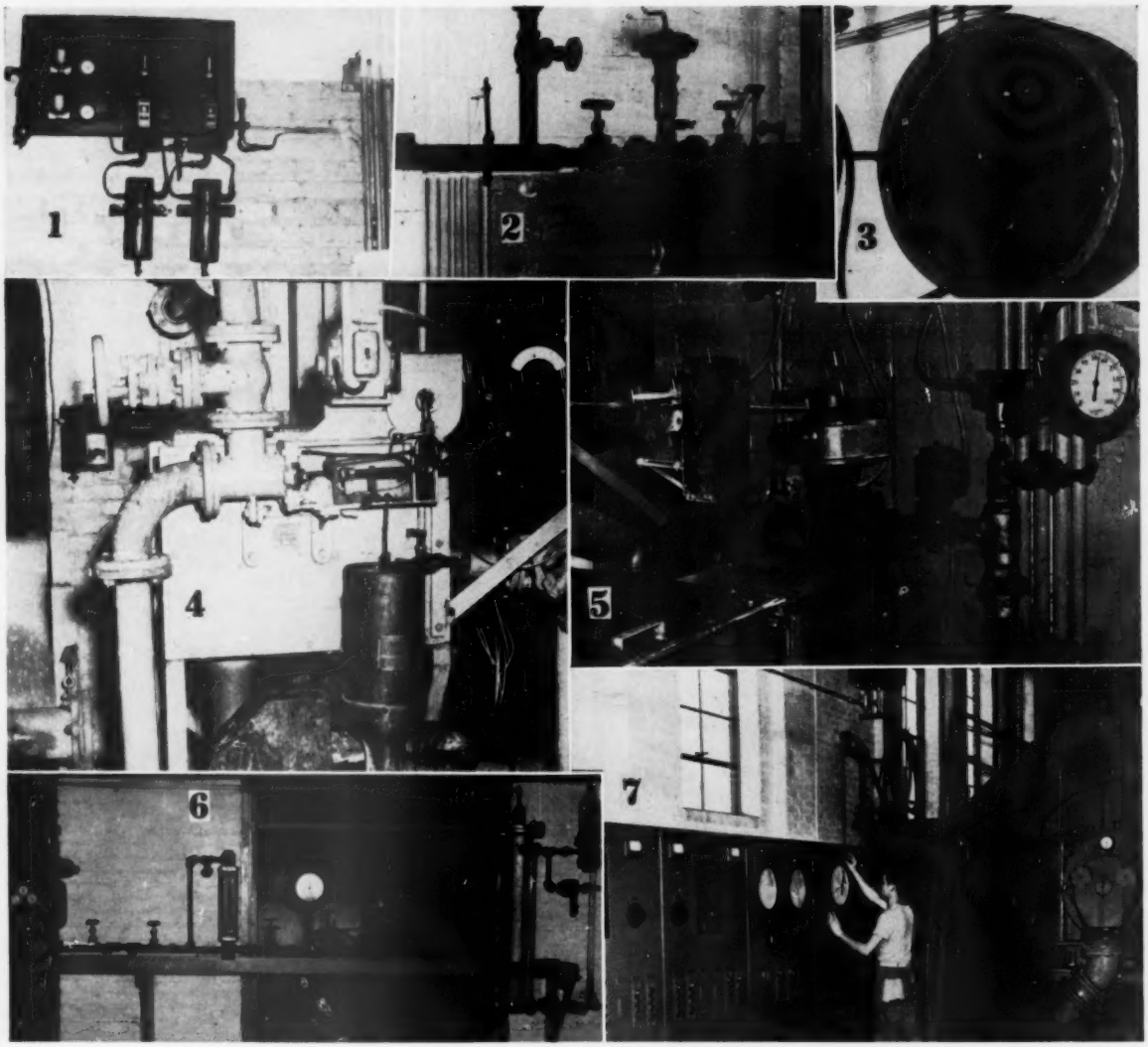
The Gould Paper Co., recently sold by Continental Can to Brazilian interests, has been making up to 130 tons of groundwood and sulfite bleached pulps, and on three Fourdriniers, 102, 112 and 150-in., it makes specialty quality papers.

Lester J. (Lefty) Smith, mill manager, is going to the Kalamazoo, Mich., meeting of the Michigan Division of the Superintendents Association on Thursday, Sept. 20, to discuss the Solozone bleach process described in this article, written especially for PULP & PAPER. That meeting will be a dinner session at the Hotel Harris.

Engineering of the bleach plant at Gould was performed by the plant engineering force, headed by J. E. Keleher, chief engineer, and installation of equipment was handled by employes of the company.

Some of the larger units, as thickener and mixers, were by Impco, and the interesting instrumentation setup described in the accompanying article was by Brown Instrument Division of Minneapolis-Honeywell Regulator Co. Stebbins Engineering and Mfg. Co. erected the bleach plant tower and tile chests and provided Semtile linings.

Consistency regulator and remote control valves were supplied by DeZurik Shower Co., and Trimbey regulators are also used. Warren Steam Pump and Goulds Pumps, Inc., supplied pumps and a vacuum pump was supplied by Nash Engineering Corp., General Electric and Reliance Electric & Mfg. Co. supplied variable speed drives and Reliance supplied electric motors. Proportioneers, Inc., supplied a continuous proportioning system for bleach liquor.



CONTROL EQUIPMENT discussed in this article on Gould Paper Co. Continuous Bleach Plant:

1.—Honeywell Pressuretrol units controlling stock levels in groundwood and sulfite stockmeters. Panel includes accessories such as rotameters and pressure regulators used in initial adjustment of flow of purging air.

2.—Instrument actuated Honeywell valve controlling flow of steam to single shaft mixer.

3.—Method of inserting thermometer bulb, and air purge system for level measurement, into bottom of bleach tower.

4.—pH amplifier mounted on consistency controller above neutralizing chest. Electrode assembly is obscured by drive motor.

5.—Honeywell motorized valve (left foreground) controlling water flow to continuous bleach liquor making equipment.

6.—Honeywell Low Flow valve at left is operated by pH controller; regulates flow of SO_2 gas to neutralize chest. SO_2 vaporizer at extreme right.

7.—Section of main control cubicle. Instruments and other panel-mounted accessories enable one man to run entire plant. (Photos by Helmstetter).

ical step of the bleaching process, keeping one eye on quality and the other on cost. Instrument (D), for example, holds a constant stock level in the vacuum thickener by throttling stock flow to the thickener. Thus, the thickener is able to maintain maximum production of properly dewatered pulp.

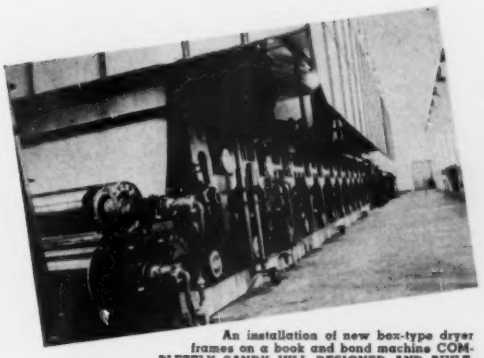
Since the bleaching of pulp is a chemical reaction, the temperature at which the bleaching is conducted exerts a considerable influence on this phase of the operation, and consequently on both the cost and the quality of the bleached pulp. If this temperature were allowed to rise too high, more bleaching liquor would be needed per ton of pulp; if it were too low, incomplete bleaching would occur, and the quality of the pulp would suffer.

A two-pen thermometer (E) controls this important temperature. One pen records the temperature of pulp leaving the single shaft mixer and controls this temperature by operating a Honeywell valve, also illustrated, which throttles the steam supply to the mixer; the second pen continuously records the temperature of the pulp at the bottom of the bleaching tower. Close control of temperature in the bleaching tower is directly responsible for a daily saving in chemicals, amounting to over $100 when the plant is operating at full capacity.

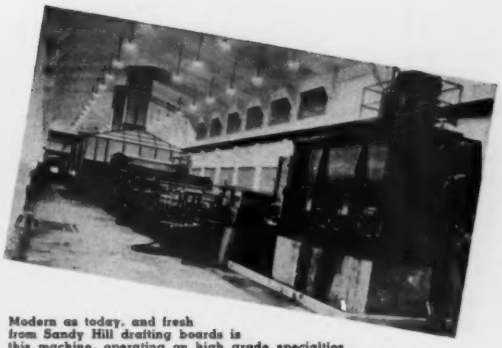
Also a part of the main control panel is an air purge type liquid level recorder (F), which plots the level trend of the pulp within the bleaching tower. This instrument is unusual in that it operates satisfactorily with stock at a consistency of 10 to 12 percent. The unique method of tapping into the tower through a single opening to install both a thermometer bulb and the air purge line for the level recorder is shown in an accompanying illustration.

Effective Neutralization Important

Pulp with a pH of about 9.5 is continuously discharged from the base of the tower by means of a screw conveyor, and falls into the neutralizing chest. Unless

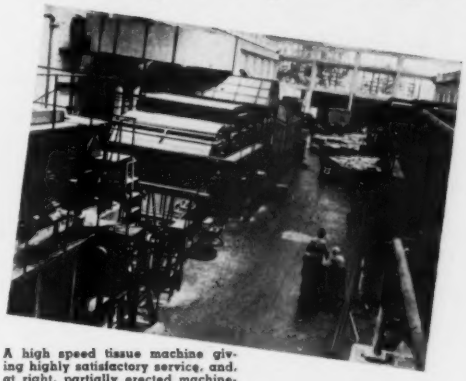


An installation of new box-type dryer frames on a book and bond machine COMPLETELY SANDY HILL DESIGNED AND BUILT.



Modern as today, and fresh from Sandy Hill drafting boards is this machine, operating on high grade specialties COMPLETELY SANDY HILL DESIGNED AND BUILT.

Completely Designed and Built by *Sandy Hill*



A high speed tissue machine giving highly satisfactory service, and, at right, partially erected machine-glazed board machine, both COMPLETELY SANDY HILL DESIGNED AND BUILT.

Press section of a completely new machine recently put in operation. COMPLETELY SANDY HILL DESIGNED AND BUILT.

PRODUCING good papers week after week in many large and small mills throughout the industry are COMPLETE paper machines DESIGNED AND BUILT BY SANDY HILL.

These machines and their superlative records for continuous trouble-free operation, are evidence of the established importance of Sandy Hill in the industry.

Another gratifying indication that Sandy Hill is doing a real job is the growth of the Sandy Hill organization. Today Sandy Hill's personnel of experienced engineers and skilled craftsmen numbers ten times what it did only fifteen years ago.

When you start to plan changes in your mill, then is the time a Sandy Hill sales-engineer can be of great service whether it be a complete machine or a minor piece of specialty equipment.

Sandy Hill's new Brochure of Pulp and Paper Making Machinery is available on request.

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Manufacturers of
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"Selective" and Corner Drives
Fourdrinier Paper Machines
"Packer" Screens

Castings
Bleaching Equipment
Scofield Felt Conditioners
Cleveland Type Bearings
Shaker Screens

all of the peroxide is removed at this stage, any of a number of highly undesirable after effects may result. For example, a highly alkaline pulp (high pH) will adversely affect the manufacture of the sheet as well as sizing uniformity. Moreover, any colors or dyes used in the sheet will suffer. An excessively acid pulp (low pH), on the other hand, will not only make it impossible to size the sheet properly, but will also seriously decrease the wire and clothing life on the paper machine.

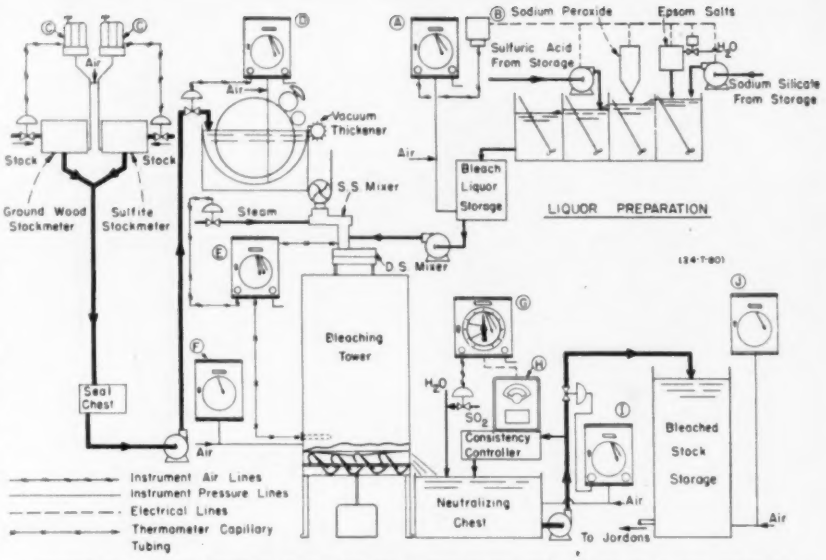
A measuring system consisting of an ElectroniK recording pH controller (G), a Beckman indicating amplifier (H), and an electrode assembly (not shown), is responsible for automatically assuring proper neutralization. The electrode assembly, immersed in the flowing pulp in a consistency controller, senses changes in pH, and transmits them electrically to the indicating amplifier which is mounted on the consistency controller as illustrated in the photograph.

The recorder, mounted on the main control panel, is connected electrically to the amplifier, and incorporates a pneumatic control unit which positions the Honeywell Low Flow diaphragm motor valve (shown in one of the photographs) which regulates the flow of SO_2 gas from a vaporizer to a water line entering the neutralizer chest. If the pH of the stock varies from the value set on the pH controller (normally about 6.8), the instrument changes the flow of SO_2 gas to return this pH to the desired value.

No Chance of Spillover

Level of the pulp within the neutralizer chest is recorded by another air purge system (instrument I). The recorder includes a pneumatic control unit which operates a valve in the flow line to the bleached stock storage chest. A drop in the pulp level within the neutralizer chest causes the instrument to partially close this valve. An increase in level, of course, causes the reverse to take place.

The bleached, neutralized pulp remains in the agitated storage chest until it passes on to the jordans and paper machines. Instrument (J) on the main recorder panel provides a continuous record of storage chest level, and the Honeywell non-indicating controller previously described shuts down the whole bleach plant if the level closely approaches the "spillover" stage.



SCHEMATIC DRAWING SHOWING BLEACH LIQUOR MIXING PLANT, FIRST OF ITS KIND, AND SOLOZONE CONTINUOUS PEROXIDE BLEACH PLANT at Gould Paper Co., Lyons Falls, N.Y. Instruments are located by letters (functions described in accompanying article):

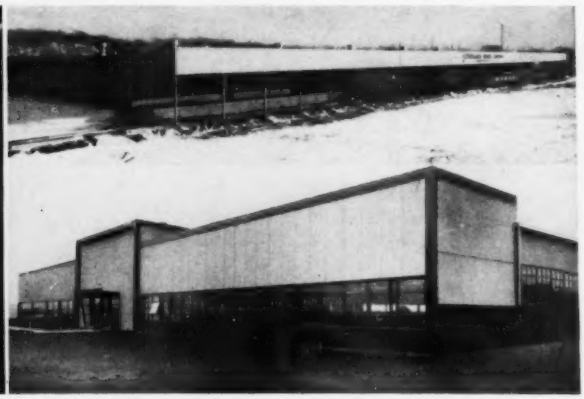
A—Bleach liquor storage liquid level controllers, B—Pressuretrol (pneumatic electric relay), C—Pressuretrol level controllers, D—Thickener level controller, E—Two-Pen recording temp. cont. (Controls steam to mixer. Records bottom tower temp.), F—Bleaching tower level recorder, G—Stock pH controller, H—pH amplifier, I—Neutralizing chest level controller, J—Bleached stockstorage chest level recorder.

Operational Flexibility Plus Product Quality

In addition to the interlocking and anti-spillover features, the over-all control system possesses exceptional operational flexibility. For example, after a weekend cleanup, each section of the plant is started up in proper sequence by means of push-buttons on the main panel. On shut-down, the operation is repeated in reverse sequence. By means of panel-mounted selector switches, any single piece of equipment can be shifted over to manual control—a highly desirable feature when work must be done on equipment located some distance from the main control panel.

Finally, tests indicate that a more uniformly bleached pulp is obtained because of the ability of automatic controls to hold critical variables at the correct values hour after hour, day after day. Since bleaching affects final sheet brightness and quality, the net result is that Gould is now on a competitive basis with the highest quality groundwood mills in the industry.

NIGHT PHOTO of the front entrance and lobby for the new Sutherland Converting Plant built at Santa Clara, Calif. Production started here last Dec. 12 on paper cups and plates and other specialty items for Western states. Through 1950, about $665,000 had been spent on land and equipment—more additions were to be made.



UPPER VIEW—New warehouse—part of general expansion at Kalamazoo, Mich., home operations and headquarters, to provide greater customer service.
LOWER VIEW—An exterior view of the new Santa Clara Converting Plant.

LINK-BELT RESEARCH AND ENGINEERING WORK FOR INDUSTRY

Thousands of tiny steel balls hammer the metal—"cold work" each roller. This shot-peening gives the roller added ability to withstand the shock and impact of today's higher speeds and heavier loads.

LINK-BELT builds extra fatigue-life into roller chain . . . to cut power transmission costs

LINK-BELT has worked hand-in-hand with America's manufacturers since 1875 to step up production

MODERN production requires positive, efficient drive and conveyor chains. Yet these chains must also be resilient enough to withstand repeated shock loads. And their ultimate cost must be low.

Link-Belt Precision Steel Roller Chain meets every requirement. Its high-strength and low-maintenance advantages mean years of trouble-free service.

For continuous Link-Belt research has developed—in addition to shot-peened rollers—other extra-wear features. For example, a special process, of value on a range of sizes, eliminates a common cause of stiff chain. And the chain receives a dramatic increase in service life, thanks to special metallurgical factors and manufacturing steps.

This is another example of Link-Belt research, engineering and production ingenuity. You'll find hundreds of Link-Belt products at work throughout industry . . . helping make America more productive. 12,423

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CUTTER-LAYBOY UNITS

THEY INFLUENCE COSTS AND QUALITY

By George A. Holt

Assistant Resident Manager, Rayonier Incorporated, Grays Harbor Division, Hoquiam, Wash.

The first rotary cutter seems to have been developed by Clark and Spencer of Lee, Mass. There had been a strong demand for a replacement of the old "stop cutters," which had been in use from the 1830's, with some device to cut paper continuously. The first Clark and Spencer machine was delivered in 1893 to the Albany Perforated Wrapping Co. This machine was operated nearly 50 years, at which time it was replaced by another machine from the Clark-Aiken Co., which is the successor to Clark and Spencer. The second Clark and Spencer cutter was sold to Eaton-Dikeman for their Mt. Holly Springs, Pa., plant in April, 1893, and it is still in use. (This is a 10-tons-per-day filter and absorbent paper mill with one 90-in. Fourdrinier.) Altogether, there were about 60 of these cutters in use by 1900.

The original inventor of the continuous rotary paper cutter was a man named Finley. Clark and Spencer's share of the development consisted of perfecting a satisfactory method of knife adjustment and the first flexible means of altering sheet length.

In the early days, the rotary cutter must have seemed to be an extremely high production machine. No cutter is really a good production unit, however, without a suitable delivery-end, and it was not until 1910 that any workable delivery-end (layboy), was invented that could really be called efficient. Cutter development first showed real progress when methods were devised to mechanically receive and stack paper from the knife. It had been necessary to employ individuals to stand in front of a cutter, and by use of hand paddles, jog the paper into a reasonably straight pile. In many mills it was the custom to use boys, and it was probably from this custom that the delivery-ends are known as layboys.

One of the first really workable delivery-ends was invented early in the century by an engineer named Maxson. His firm is still in business as the Maxson Machinery Co. The Maxson layboy was originally tried out and, to a great extent perfected, in the Hammermill plant at Erie, Pa., and this piece of equipment became well known as the Erie Layboy.

Mr. Holt, graduate of University of Washington and many years with Rayonier, who gave this paper at Supts. Convention, Portland, Oregon.

Among pioneers in the rotary cutter field we find such familiar names as Hamblet, and Moore & White, who are still building machines today.

In recent years more attention has been paid to finishing processes than ever before. This is partly due to more exacting quality requirements on the part of customers, and partly due to the factors involved in rising costs. Paper finishing rooms have presented an excellent opportunity for substantial reductions in per-ton costs. This has stimulated the improvement of rotary cutters.

Speed-Up of Cutters

In these new machines knife castings have been re-designed, and are now built in the circular form which provides an improved balance in high-speed operation. It is said, "there is nothing new under the sun," and this may be true, because a cutter illustrated in about 1895 shows a fly knife secured to a series of wheels. Knife designs and steels have changed to conform to the requirements of higher speeds; and it has also been found possible to combine a steel bed knife with a cast-iron fly knife and secure excellent results. This knife is to a considerable extent self-sharpening, and further improvement of this feature should be of immense benefit.

It has at last been recognized that rotary cutters should merit attention with regard to construction on a precision basis. New machines are equipped with anti-friction bearings instead of the bushings so extensively employed on older models, and this has contributed to greater speeds. Until recent years, 100 to 150 fpm. was considered a satisfactory cutter speed. With delivery-ends then in use, it was difficult to run faster. Cutters are now in production which will run up to 700 fpm. These machines are carefully and precisely constructed and adjustments are made on closely calibrated built-in scales instead of by guess work. For example, when a cutterman sets a knife on one of these machines, he uses a built-in micrometer scale.

Overlapping Layboys

Obviously, having managed to speed cutters up to 500 to 700 fpm., it is necessary to discuss some method of handling the paper leaving the knife at such high speed. Layboys, as such, are classified and purchased as separate units, but actually, they must be considered as part of the cutter. Late model overlapping layboys are as far ahead of standard delivery-ends as the new cutter is in relation to those of 1900. It is surprising that there are not more overlappers being used in the West. The principle is not new, and cutters so equipped have been fairly common in the East for many years. It is the overlapping layboy which makes high-speed cutting possible with sheets which are fragile enough to sustain damage if discharged into a layboy box at several hundred feet per minute. In the last analysis, overlappers are merely a means of allowing the cutting unit to run at high-speed; while at the same time delivering the sheet to the layboy boxes slowly enough to prevent damage and allow proper jogging. The difference in speed between the two units is absorbed by slowing down the sheets discharged from the knife in a special nip roll arrangement and by a variation of belt speeds. By so doing, the successive cuts coming from the

RAYONIER'S MODERN FINISHING ROOM

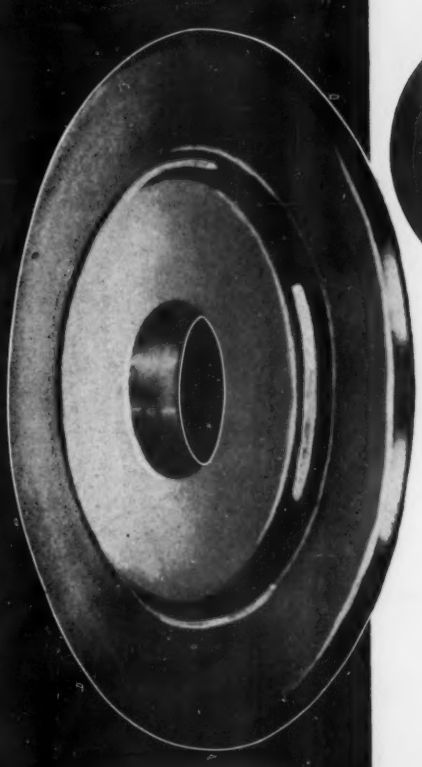
Just a few other points about Rayonier Incorporated's enlarged Paper Finishing Room which a visitor would notice, and which are noteworthy, besides the improved rotary cutter described in this paper:

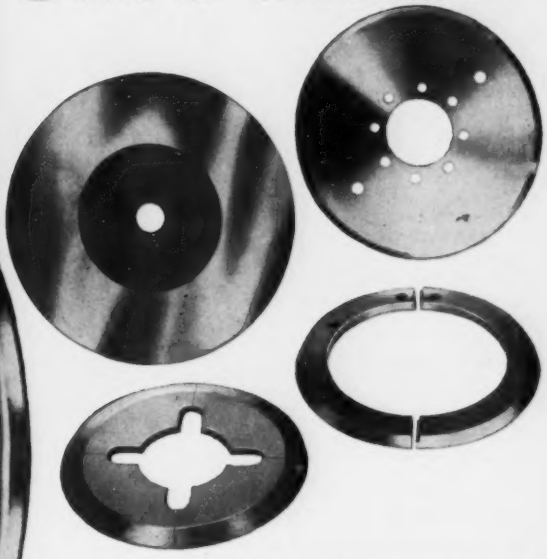
Whole skips of paper, about 50 reams on a skip, are now being loaded direct into railroad cars and when they reach the customer, they can be taken off the r.r. car and moved direct to the printing presses where used. Skip assembly and lift trucks thus save a lot of handling.

The paper products which are made at the Grays Harbor Mill are being packaged in paperboard instead of kraft paper, as formerly, and this reduces damage and makes a better impression on the purchaser as the package looks neater and more substantial.

The new Finishing Room addition has a new Seybold cutter with light signal which flashes when paper is in place for cutting—speeds up operation.

you GO with OHIO GREEN





OHIO CIRCULAR CUTTERS are the result of 50 years of experience in heat treating and the working of fine tool steels.

The best steel obtainable coupled with accurately controlled heat treatment plus precision machining and grinding go together to make OHIO CUTTERS the best for long continuous runs and tough jobs.

Our cutters are furnished in various grades and styles depending on the job for which they are intended. Such steels as Nickel Carbon Alloy — High Speed — Hi Carbon — Hi Chrome and Stainless are used. The tolerances of the cutters can be held to ± .0001 if required, although ± .002 is as much as is usually required.

OHIO KNIFE Co.
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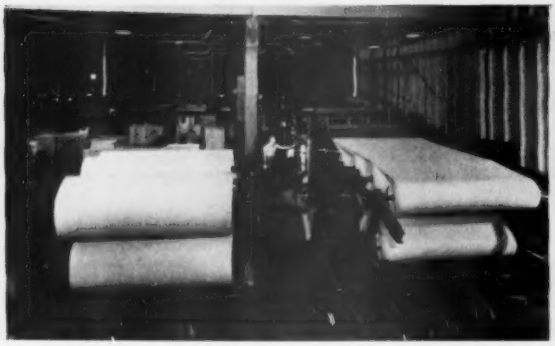
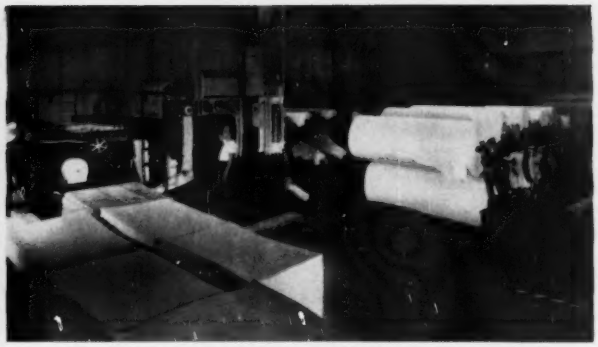
WORLD'S LARGEST EXCLUSIVE MANUFACTURERS OF KNIVES



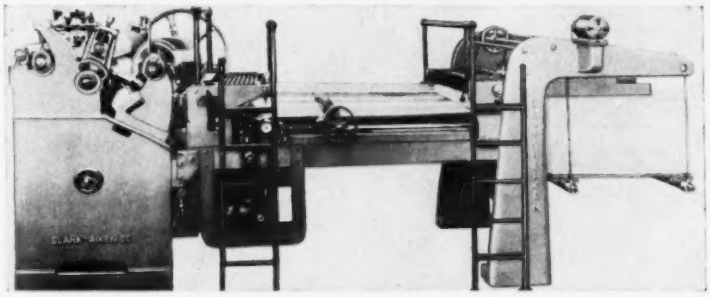


TWO VIEWS OF CLARK-AIKEN Rotary Cutter in new Finishing Room Addition at Rayonier Incorporated, Hoquiam, Wash., Paper Mill. Production is mostly sulfite printing papers of various weights. These views show two powered backstands on tracks. One stand moves backward from cutter when not in use; the other moves in and out from the side. Thus waiting for roll-loading and down-time is eliminated. It is also unnecessary to stop other work to devote attention to cutter which has run out a set. A new 2-foot wide, full length addition to Paper Mill, was built to make room for the new Clark-Aiken cutter and auxiliary equipment.

knife at high speed overlap each other until they in turn are slowed down. There is no gap between cuts, just a steady stream of paper into the layboy boxes.

We are employing three overlapping units at our Grays Harbor mill and are finding them very satisfactory. Two of these units were built by the Maxson Co., and one by the Clark-Aiken Co. The principle involved is the same in both cases and their differences are in minor items of design.

Actual operation of overlappers is not complicated, although it requires a little time for operators to absorb the principles and become proficient. There is no doubt that overlappers will pay for themselves when used consistently.

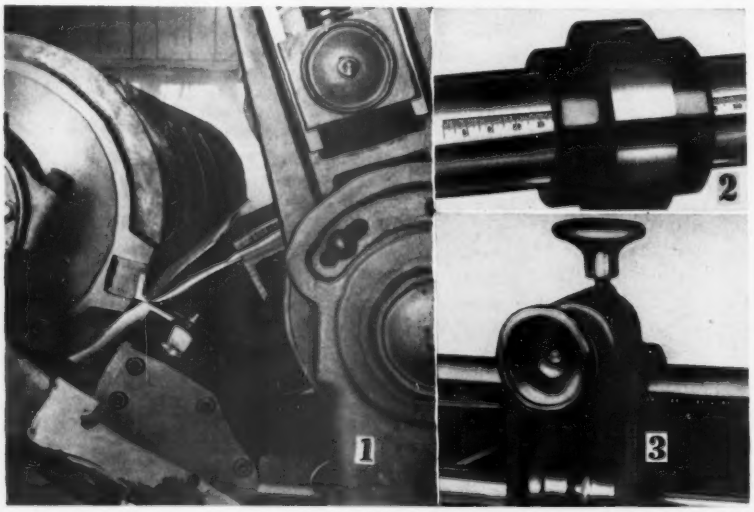


TYPE H CLARK-AIKEN High-Speed Heavy-Duty Cutter-Layboy Unit, Simplex Model, with overhanging type or "Vickery" layboy. Also cutters are available with conventional layboy. Mr. Holt said there is wide use of overhanging type in Eastern mills; that they permit highest speed cutting, especially of fragile sheets, without damage.

Double-Powered Backstands

So far we have spent our time on the cutter, or in front of it, but one of the greatest sources of down-time on cutters is contained in the handling of the rolls to be cut. Obviously, a single set of roll stands behind the cutter must be stripped and reloaded after every set. It is possible to overcome this defect somewhat by loading two sets in a single stand, but this is only a partial answer on most operations. Various mechanisms have been worked out to eliminate down-time caused by set changes. One of these is the revolving stand. Rolls are loaded semi-vertically on both sides of the center column and the stand pivoted when the first set runs off. Another idea which was tried consisted of a device similar to a reel which was simply rotated to bring a certain number of rolls into position for running. The application of these backstands was limited, and they were not too practical in operation.

NEW CLARK-AIKEN Super-speed precision cutter-layboy unit made by the Lee, Mass., firm incorporates new features to insure sustained accuracy. They have (1) patented "Spiral Shear" cylinder knife which cuts with scissors action instead of chopping, for any type or weight of paper. Except where high-speed steel is required, knife is cast iron, and operating against bed knife, is self-sharpening. Worm-screw device permits adjustment with micrometer accuracy. (2) Shows scale marking of slitter shaft, facilitating accurate setting. This new feature, in conjunction with similar scale marking of the jogger support bar (3) permits accurate alignment of sheet from slitters to pile without using measuring tapes. Type C units are in 76, 88, 100, 112-in. maximum width capacities.



One of the more successful pieces of equipment consists of two complete sets of roll stands. These are mounted on tracks and are moved electrically into and out of operating position. In actual practice one stand moves backward from the cutter when not in use, and the other one moves in and out from the side. It is possible, using this method, to eliminate a large percentage of down-time at the cutters. It also increases flexibility of the operation by making it unnecessary to stop other work and devote immediate attention to a cutter which has just run out a set.

Space factors frequently govern the amount of equipment which can be in-

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LONGER
Cutting
Life
SIMONDS
FORGED
SLITTERS
Forged Slitters
Last Longer
SEE BOTTOM OF BOX
FIVE SIMONDS SLITTERS
Simonds method—manufacturing from forgings. Creates dense grain structure at cutting edge without directional properties, which tests prove to be the most desirable structure for slitters operating against hardened steel rolls.
Conventional method manufacturing from bar stock. Grain structure follows direction of rolling, creating a uniform but undesirable structure at cutting edge for slitters operating against hardened steel rolls.
STURDY NEW DESIGN BOX HOLDS FIVE SLITTERS

Here's Why SIMONDS SLITTERS Cut Longer . . . they're FORGED!

This new package tells the "inside story" of the unmatched performance of Simonds Forged Slitters on every score-cutting job. Simonds Special Steel (forged for added toughness) plus controlled hardening and grinding to exact specifications, add up to longer runs, with fewer sharpenings and longer cutting life from every Slitter. So, for lowest slitting cost, see your Simonds Distributor about "Red Streak" Forged Slitters . . . available from stock in all standard sizes.

SIMONDS
SAW AND STEEL CO.

Branch Offices in Boston, Chicago, San Francisco and Portland, Ore. Canadian Factory in Montreal, Que.

stalled to service a cutter, but in considering the use of double backstands it is probable that in most cases the extra production will reduce the required storage space for rolls behind the cutter. We now have a set of powered backstands of this type in our paper mill at Grays Harbor. Our short experience has convinced us that the expense of these backstands was justifiable.

Everyday operating problems from the actual cutter operator's standpoint are different in each mill. In this part of the country we are cutting everything from fruit wrap to extremely heavy board stock. Our own operation, of course, consists primarily of the production of printing papers in various weights, and probably has little or no resemblance to the cutting problem, let us say, of a mill producing carton stock. However, the one thing we all have in common is the necessity to look forward to the eventual adoption of the best and fastest method that is possible to apply to our own particular operation.

McDonald Exec. Committee Chairman of Crown

At Crown Zellerbach Corp.'s board meeting in San Francisco Aug. 9 decision was made to not fill the board vacancy caused by recent passing of Chairman Louis Bloch. R. A. McDonald, formerly executive vice president, was made chairman of the executive committee. Other officers, including President J. D. Zellerbach, were re-elected.

Expansion for Alaska P & C

First major expansion for Alaska Pine & Cellulose Co. since the company took over mills of B. C. Pulp & Paper Co. was announced by Vice President and Managing Director Walter C. Koerner, involving a $6,000,000 program at Port Alice, B.C.: whole log barking and chipping plant, bleach plant, bleached pulp screen room, high pressure 225,000-lb.-per-hour steam boiler and changes in water supply.

Celanese Considers Site

Celanese Corp. of America is looking into possibilities of establishing a large pulp mill near Castlegar in the Arrow Lakes district, southeastern British Columbia, within a few miles of the extensive power and metallurgical operations of Consolidated Mining & Smelting Co.

Bloedel to Add Digester

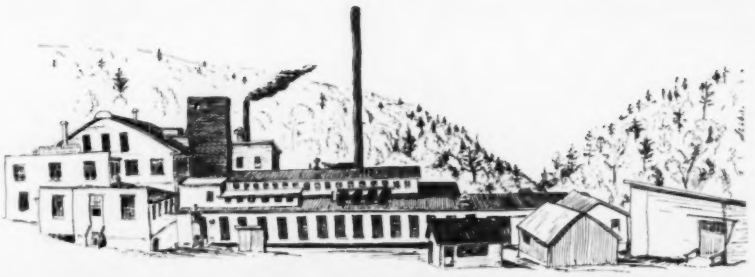
Bloedel, Stewart & Welch's unbleached kraft mill at Port Alberni, B. C., now producing 215 tons, is installing its fourth digester, 4700 cubic feet, compared with 4200 for the other three. It is being built by Dominion Bridge Co., will be in operation in January.

Pulp Mill Planned

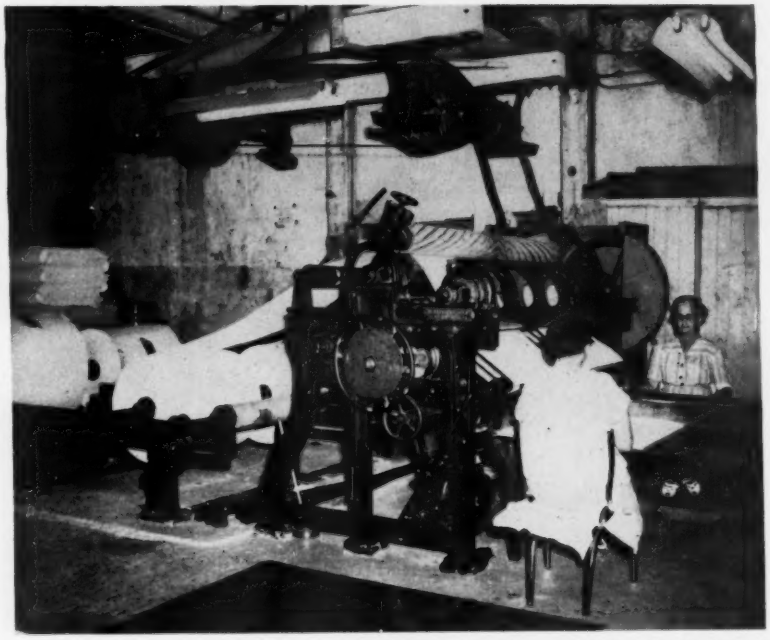
A $10,000,000 pulp mill and power plant at Yates, five miles east of Edson, Alberta, is planned by New Pacific Coal & Oil, Ltd., of Toronto, according to George Roberts, Montreal, executive of the company, which acquired a 2,000 square mile timber lease.

MacMillan Doubling Capacity

Expansion at H. R. MacMillan Export Co.'s mill at Harmac, B.C., is well under way. Capacity is being doubled. The bleach plant has been in operation several months. Most equipment was from Paper Machinery, Ltd. Pulp is washed on a series of Oliver United and Sherbrooke Machinery pulp washers. Stock pumps were supplied by Bingham, Canadian Ingersoll-Rand, Canadian Allis-Chalmers and Shawinigan Chemicals, with Canadian Stebbins Engineering installing the tile linings. Sulfur burner was by G. D. Jenssen Co., Inc.



RECENT ARTIST'S SKETCH OF EATON-DIKEMAN CO., FILTER PAPER MILL at Mount Holly Springs, Pa. Makes more than 60 regular and 40 special grades of filter and other absorbent papers for industries, laboratories, etc., on 90-in. Fourdrinier (10 tons a day.) Olen V. Yates is Pres.; P. A. Yates, Treas.; T. A. Liversidge, Sec. & Pur. Agt.; T. F. Pulling, Sales Mgr.; E. W. Dowd, Supt.; F. H. Olmstead, Chief Eng.; D. Y. Liversidge, Chief Chem. Mill founded in 1890; papers used coffee, drug, soap, beer, many other filtrations; plastics, litmus and test paper; medical inhalers; air-conditionings and seed germination.



OLDEST CLARKE & SPENCER CUTTER still in use is this one—picture taken especially for PULP & PAPER at EATON-DIKEMAN CO., filter paper mill at Mt. Holly Springs, Pa. Predecessor of the Clark-Aiken cutters, this machine is set up to cut double and to cut a total of eight rolls at a time. The filter paper is chiefly 100% rag stock, will range in thickness from 5½ thousandths to 100 thousandths. Of course, cutting of lighter grades is faster than heavy. Olen V. Yates, President, said machine, referred to in this paper by Mr. Holt, is still operating in fine shape.

NEW ST. JOE EQUIPMENT

Construction of new pulp and paper mill adjacent to present operation will be effected by St. Joe Paper Co., Port St. Joe, Fla., according to Harry H. Saunders, production manager.

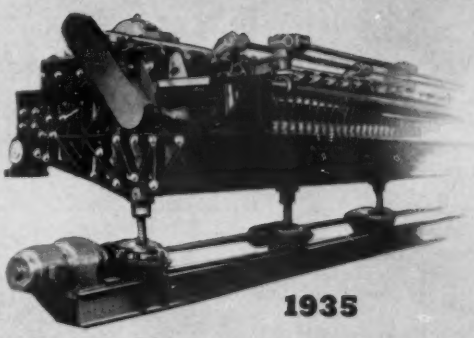
Cost is estimated at $25,000,000 with orders placed for following equipment: Pusey and Jones Fourdrinier 220-inch trim, designed for 2,000-feet-per-minute and 700 tons paperboard daily with General Electric drive; two 300-ton Combustion Engineering recovery boilers; two Babcock and Wilcox 200,000-pound hourly power boilers, 650 psi and 850 temperature; two General Electric 12,500 kilowatt turbines, two Allis-Chalmers 9 by 175-foot line kilns; Sutherland refiners and pressure washing system; Shartle broke beater, two 10-knife 196-inch Carthage chippers; six digesters; and Dorr causticizing system.

Engineering is by Cummins and Barnard, Inc., Ann Arbor, Mich., with Tidewater Construction Company, Norfolk, Va., as general contractor. Completion scheduled for 1952.

Roger L. Main is St. Joe Paper Co. president, with Mr. Saunders in charge of manufacturing operations. Besides manufacturing pulp and paper, St. Joe Company has container plants at Port St. Joe, Fla., Houston, Texas, and Hackensack, N.J. Contract for an additional new box plant at Port St. Joe has been awarded the Austin Company, Houston, Texas.

PRESSURE INLETS?

PROGRESS in inlet engineering is never-ending at Valley. This progress, over many years, has built up a reservoir of experience which is yours to profit by.



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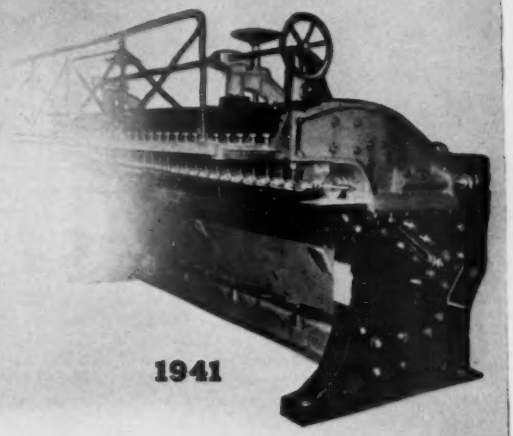

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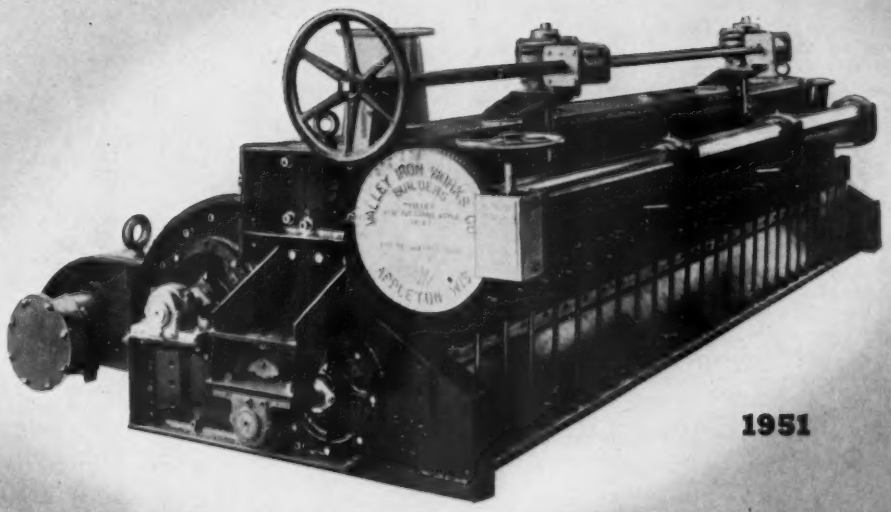


1951

VALLEY IRON WORKS CO.
APPLETON, WISCONSIN

Wet End Helper Drive

USES ON CYLINDER BOARD MACHINES

By R. C. Berger

Application Engineer, General Electric Co., Cleveland, O.

This timely article was written especially for PULP & PAPER *readers in the paperboard industry who are finding new operational problems as a result of the phenomenal speed-up of machines in recent years. Cylinder machine speeds have reached 500 to 600 feet per minute and new ones are designed for up to 800 fpm. For this reason, and incidentally, in relation to cost and quality factors, the article by Mr. Berger is a timely one for the paperboard industry.*

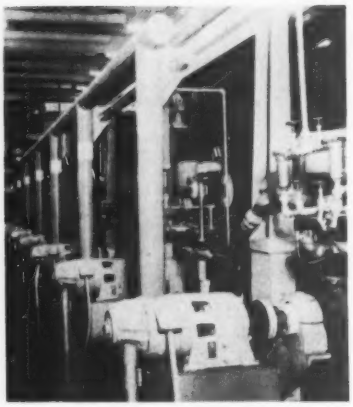


FIGURE 1—TYPICAL INSTALLATION OF WET END HELPER MOTORS on cylinder machine. These are totally enclosed, separately ventilated, d.c. gear-motors described as ideal for operating at wet end of a board machine.

Before the wet end helper drive was born, the first press or main press on the board machine supplied the turning effort for the entire "wet end." The cylinder moulds and all presses ahead of the main press were driven by means of the common felt on the wet end. The felt not only functioned to support the sheet, but it also acted as a belt that in turn supplied torque to the various sections of the wet end. It is easy to see that each of the sections adds tension to the felt and that this tension is cumulative and becomes a maximum immediately preceding the first press. After the felt passes through the first press, it immediately becomes slack.

Such felts had to be made with strong warp threads in order to give them the high strength characteristic to withstand the heavy tensions. Many years ago, it was found that this strain on the felt could be reduced to some extent by over-driving the primary presses by means of a slip belt from the main press drive. This is not uncommon today, however the disadvantages of the slip belt drive are giving way to modern design because it is recognized that it is difficult to control and hold the helping torque on driven sections of the wet end.

As electricity began to come into more and more use, motors were applied to the various wet end sections and today these drives are commonly known as wet end helper drives. *(Fig. 1.)* By individually driving the sections of the wet end by a controlled electric motor, it is found that the load on the felt can be greatly reduced and this, of course, means increased felt life. Further, the decreased strength requirement gives more latitude to the felt manufacturer and this in turn permits him to weave a felt that will not only have more efficient water removal characteristics but also the lighter felt will tend to improve the finish of the sheet. *(Fig. 2.)*

Backstand Driven Helper Generator

The first arrangements for motorizing the wet end sections of a cylinder machine were accomplished by belt connecting an auxiliary generator to the main press backstand and this system is still in use today. The generator in turn is electrically connected to the wet end helper motors.

It is a well known fact that the torque of a d.c. motor is directly proportional to the armature current and the motor field flux. If the motor is separately excited from a constant source of direct current, then the field flux remains constant. In order to cause the motor to produce constant torque, it is only necessary to maintain constant armature current for any and all speeds within the speed range of the machine.

With the generator driven from the first press backstand, no regulators are employed because the system is more or less self-regulating. The generator field is set to circulate a given amount of current at a given speed. At the instant the machine is speeded up, the helper motors are initially unloaded because the felt tends to pull the motors, but the generator voltage also increases, which causes the generator current to be re-established and the helper motors are again loaded up to produce essentially the same torque.

When a generator is belted to the first press backstand, the IR drop in the armature circuit is a greater percentage of the generator voltage at low speeds than at high speeds, in fact, on machines with wide speed ranges (4 to 1 or more), it is necessary to furnish a booster generator in series with the backstand generator to furnish the loop circuit drop so that the generator voltage is proportional to motor speed throughout the speed range of the machine.

Since no regulators are furnished it is necessary for the machinetenders to readjust the booster field rheostat as load changes occur. Closer attention is also required when a major weight or stock change comes along which, of course, results in a major change in machine speed.

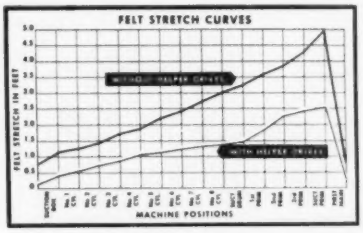


FIGURE 2—FELT STRETCH CURVES. These curves give comparison of felt stretch that might occur without helper drive and felt stretch that might occur with helper drive on wet end of cylinder machine.

Lineshaft Driven Generator

The backstand for the first main press must be larger than those for the succeeding main presses to supply the wet end load, whether or not helper motors are used. To avoid this, and to duplicate backstands, the helper generator can be belted to the lineshaft. This requires a current regulator connected to the generator field to provide for acceleration and deceleration control when starting and stopping the wet end with the lineshaft running. To make the regulator effective in overcoming the IR drop of the generator and motor armatures, the generator is supplied with substantial field control range. Such a regulator also has the added advantage of holding the current constant, so that somewhat less attention is required from the machine tender than with the backstand generator-booster scheme.

High-speed amplifying exciters, such as the amplidyne, are being used very successfully for the current regulating control. Such control is accurate, dependable, and relatively simple.

Separate Motor-Generator Set

The generator for the helper motors may also be driven by a constant speed alternating current motor, usually an induction motor, making a separate motor-generator set. This has the advantage of not requiring power from the lineshaft and its prime mover, and it may be somewhat lower in first cost.

In this form, the generator voltage is regulated by amplidyne control as a function of total generator current. At low speeds, the voltage required to circulate constant current is low while at high

Weyerhaeuser Reports efficient chemical and heat recovery with B&W Unit

An Example of B&W Engineering for Economy

The entire paper industry has watched with interest each step in the development, by Weyerhaeuser Timber Company, of a great, integrated wood-use center at Longview, Wash. B&W is especially gratified by Weyerhaeuser's report of satisfaction with the performance of their Kraft B&W Recovery Unit at this location.

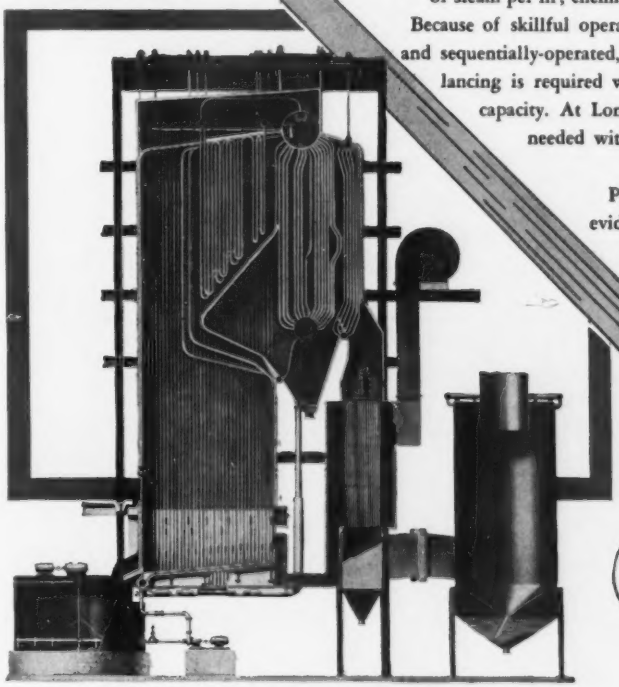
A second B&W unit, of 150 ton capacity, was placed in service at Springfield, Ore., in December, 1950; recently, a third unit was ordered (for Longview) with a capacity of 300 tons.

Operating at 650 psi, 700 F, the Longview installation delivers 120,000 lb. of steam per hr; chemical reduction is 96 per cent.

Because of skillful operation, combined with efficient boiler design and sequentially-operated, retractable soot blowers, no routine hand lancing is required while the Springfield unit operates at rated capacity. At Longview, a small amount of hand lancing is needed with the unit operating at 30 per cent above rated capacity.

Performance of this unit adds to the tangible evidence of B&W's prominence as designer and builder of modern chemical recovery equipment for the pulp and paper industry.

The Babcock & Wilcox Company,
85 Liberty St., New York 6, N. Y.



Typical B&W 2-Drum Recovery Unit equipped with B&W Cyclone Evaporator

BABCOCK & WILCOX

P-760

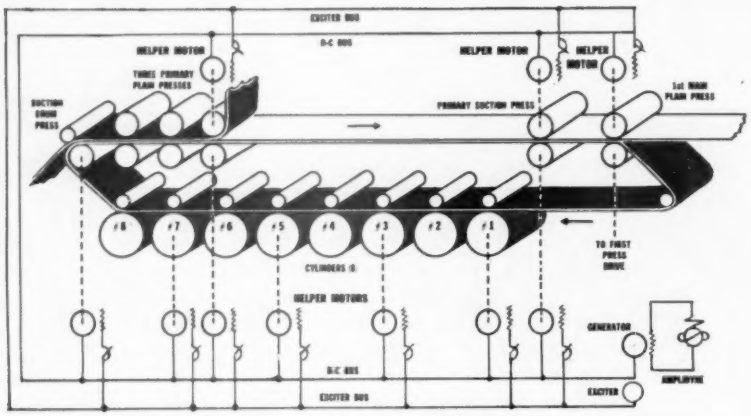


FIGURE 3—SCHEMATIC DIAGRAM shows typical wet end helper drive for cylinder machine.

speeds the voltage required is high. The regulator in this case compensates for major changes in machine speed whereas in the previous form the regulator acted as a "trimmer" because the lineshaft generator voltage did change with machine speed.

It is not so easy to understand this type of drive, because there is no tie to the lineshaft speed. It should be remembered that the wet end helper drive is torque regulated rather than speed regulated. Actually, the speed of the felt, as always, is determined by the speed of the first press. The helper motors are never synchronized with the felt, but rather they merely supply contant torque to the various sections of the wet end, thereby relieving the felt of much of the accumulated load. All of the load is not removed from the felt because a certain amount of tension is necessary. The tension in the felt must always increase, otherwise the sheet will be disturbed. *(Fig. 3.)*

The helper motors perform the same function as "small boys" equipped with hand cranks on the backside of the machine supplying a "push" to the various sections of the wet end. If the machine speed is increased by increasing the speed of the first press then the "small boys" find that they must turn their cranks much faster to furnish the same torque. Admittedly, these same "small boys" expend more horsepower when they crank faster but the torque they produce remains constant. Since the helper motor fields remain constant, the armature current regulator automatically adjusts the generator voltage to cause the motors to speed up or slow down as the speed of the first press is changed. It is possible to preset the amount of torque or "push" required and this torque will be maintained for any and all speeds within the speed range of the machine.

If it is desired to increase the torque and thus further relieve the felt of the load, this can be adjusted by the operator from a single control on the operator's panel. If it is desired that different helper motors produce different torques with respect to one another, then individual load adjusting rheostats in the form of field rheostats on each motor can be adjusted by the operator to change the relative torques by adjusting the field flux.

Summarizing, then, the helper motors are not synchronized with the first press. They supply a regulated torque to the felt that relieves the felt of much of the load that it would have if there were no helper motors used.

It is a recognized fact that the lineshaft generator type of wet end helper drive is the most popular form. This is particularly true when the lineshaft prime mover is a mechanical drive steam turbine because the resulting combination gives a better steam balance. If this is true, then it is only natural to ask "why divorce the auxiliary generator from the lineshaft?" There is a definite field for both forms and the motor-generator set form is often the key to the solution of other problems.

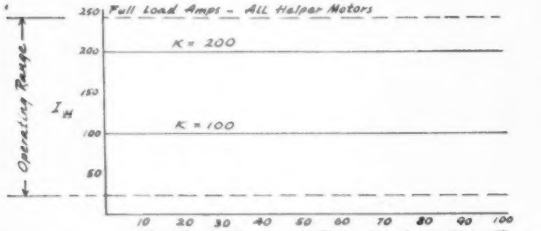
For example, by removing the auxiliary generator from the lineshaft it tends to unload the prime mover of the lineshaft itself, be it electric motor or turbine drive. This immediately releases capacity in the prime mover that often can result in an increase in machine speed that might not otherwise be possible. Second, it tends to clean up the backside of the machine by eliminating belts and pulleys.

During the past five years, board machine speeds have increased by leaps and bounds. Machines that at one time were limited to a top speed of 300 to 400 fpm. are today running at 500 to 600 fpm. Some board machines are being designed today for speeds as high as 800 fpm. This sudden increase in speed begins to make a sectional drive look attractive from the standpoint of first cost and reduced maintenance costs.

An electric motor drive rather than a mechanical drive on the first press opens the door for possibly further improvements in the wet end helper drive.

Before board machines were equipped with sectional drives (no lineshaft), one fact was apparently neglected as far as wet end drives were concerned. It has been found that there is a difference in the torque requirements between the machine running with no stock and with the machine running with stock on the felt. It is a very noticeable change and it might be described as a car running down a super highway (no stock on the machine) and the same car running down a muddy country road (stock on the machine). This, of course, comes from the fact that the squeezing and sucking operations performed by the press rolls actually add a tremendous amount of work to the sheet during the water removal operation. There are times when there is a major change in the weight of stock, at

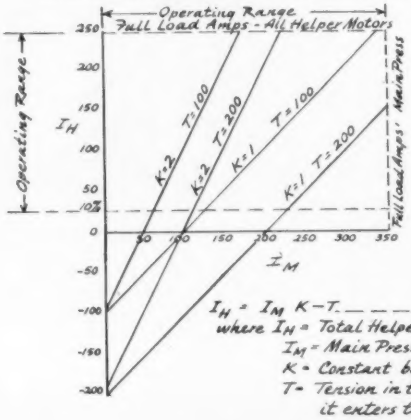
FIGURE 4—WET END HELPER DRIVE—MECHANICAL DRIVE ON MAIN PRESS. These curves show how helper current remains constant regardless of torque required at the indriving shaft to main press.



$$I_H = K \quad \text{(1)}$$

where I_H = Total Helper Motor Amps
K = constant between 10% Amps and 100% Amps (Load Adj. Rheo)

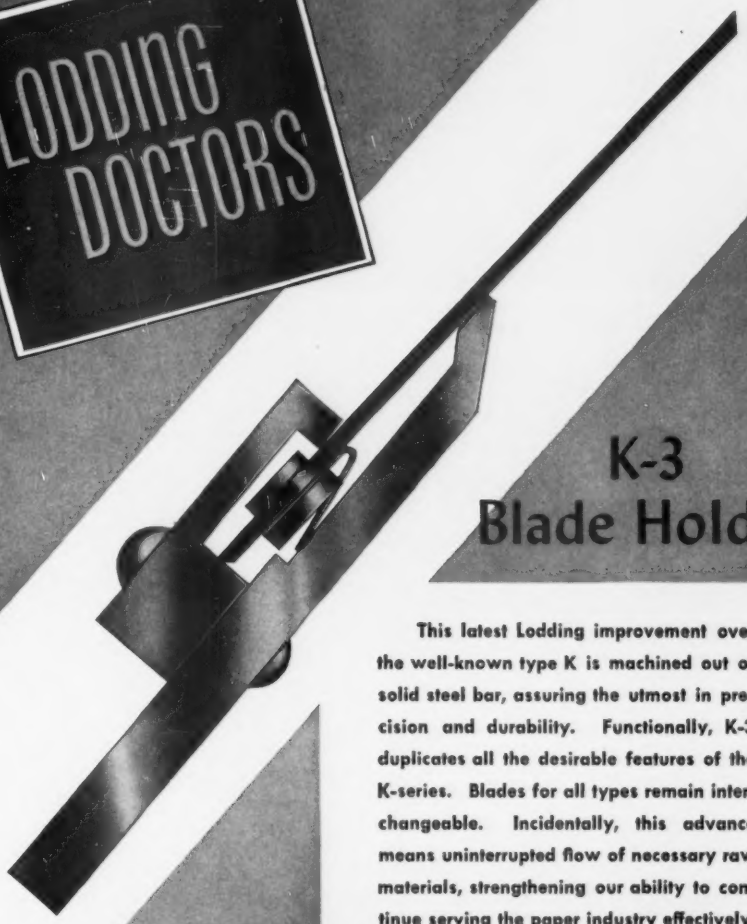
FIGURE 5—WET END HELPER DRIVE—ELECTRIC DRIVE ON MAIN PRESS. Curves indicate characteristics of new helper drive regulator used with sectional drives. Drive current, which is function of first press current, can be adjusted to follow any one of a family of curves in effort to closely match characteristics of wet end.



$$I_H = I_M K - T \quad \text{(2)}$$

where I_H = Total Helper Motor Amps
I_M = Main Press Motor Amps
K = Constant between 1 and 2
T = Tension in the Felt where it enters the Main Press

LODDING DOCTORS



K-3
Blade Holder

This latest Lodding improvement over the well-known type K is machined out of solid steel bar, assuring the utmost in precision and durability. Functionally, K-3 duplicates all the desirable features of the K-series. Blades for all types remain interchangeable. Incidentally, this advance means uninterrupted flow of necessary raw materials, strengthening our ability to continue serving the paper industry effectively.

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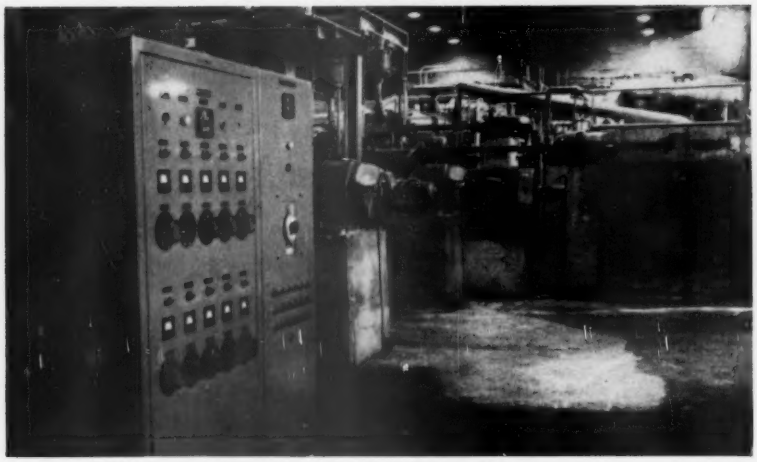

FIGURE 6.—TYPICAL OPERATOR'S PANEL FOR WET END HELPER DRIVE for cylinder machine. Mounted on this panel are helper motor line ammeters, field rheostats, totalizing ammeter and total load adjusting rheostat.

which time stock is completely removed from the vats or the consistency is changed over a very wide range. If the drive is set up for a particular set of stock conditions, and if these conditions are changed or if the stock is actually removed from the vats, the felt piles up ahead of the first press or a loop develops ahead of the first press. This is only natural because when the power requirements are suddenly removed, the felt pulls the first press motor which starts to generate, because the helper motors are still delivering the torque as set up on the operator's panel before a change was made in the stock. It is then necessary for the machinetender to go back to the wet end operator's panel and reduce the amount of help the helper motors are delivering to the wet end. This situation occurs only for extreme changes in stock consistency or stock changes, however, it is nevertheless, a problem.

To minimize this problem, a scheme is in use based on the premise that the helper motors should furnish sufficient torque to maintain the point of maximum tension (immediately preceding the first press) substantially equal to a constant for all weights and machine speeds.

Since the driving effort to the entire wet end comes from the helper motors and the first press motor, then both are inter-related and if the helper motors could be regulated as a function of first press load rather than as a function of some fixed reference, then it appears that the operation could be greatly improved.

For example, with a fixed amount of help from the helper motors as the sheet weight is increased, load comes on the first press motor and since the helper motors are delivering constant torque, it becomes necessary to increase this torque to take care of the increased torque requirements of the entire wet end in order to keep the point of maximum tension equal to a constant.

Now, if we take a signal across the commutating fields of the first press armature loop circuit, we would obtain a voltage signal proportional to first press load. If this signal rather than the signal from some fixed reference is fed into the current regulator, then as the first press load increases, the signal to the helpers will be increased automatically and hence the help offered to the helper motors will be increased making it unnecessary to manually make this adjustment.

The "old rule of thumb" that one-half of the wet end friction load goes to the first press and the other half goes to the helper motors is not entirely true. It is most certainly a first approximation, however, recent experience on the part of a number of mills has shown that conditions can be improved by operating the helper motors at higher torques than they have in the past. This means that the present trend is toward larger helper generators. Therefore, the new circuit will not be a direct function of helper generator current versus main press current, that is, a 10% increase in first press load should not necessarily mean a corresponding 10% increase in the helper motor load.

Putting it another way, we can set up algebraic equations for both systems.

In the cost of the constant torque applications when the first press is mechanically driven from the lineshaft *(Fig. 4)*, then:

$I_h = K$ ..... (1)

Where:

I_h = Total Helper Motor Amperes.

K = Constant that is set up by the load adjusting rheostat.

In the case of the variable torque applications when the first press is driven by an electric motor *(Fig. 5)*, then:

$I_h = I_m K - T$ ..... (2)

where:

I_h = Total Helper Motor Amps.

I_m = First Press Amps.

K = Constant that determines the slope of the curve.

T = Tension in the felt where it enters the first press and this value determines the position of the line on the coordinates.

Equation (2) states that the difference between the first press amperes and the helper motor amperes equals tension in the felt in back of the first press.

The constant K represents the ratio between the torque requirements of the first press and the helper motors and is a function of the paper machine rather than an operator's decision. If the K in the electrical circuit matches the K of the machine, then the felt tension will remain constant (but adjustable) for all sheet weights. The constant K is made adjustable so that the slope of the line can be made to match the torque requirements of the machine in order to hold T constant. The value of T is adjustable as desired by the operator, must like the load adjusting rheostat on the constant torque sceme.

The value of K will lie between 1 and 2 for most applications. When K equals 1, a 50 ampere increase in first press current will cause a 50 ampere increase in the helpers. When K equals 2, a 50 ampere increase in main press current will cause a 100 ampere change in the helpers.

It has been determined by one felt manufacturer that on a typical 180-foot felt, approximately .3 amperes per inch width of the felt will stretch the felt by one foot. This value will, of course, vary with different types of felt. Therefore, taking as a hypothetic case on a 135-in. felt, 40 amperes will correspond to one foot of stretch. Similarly, a five-foot stretch would be equivalent to 200 amperes. Therefore, for this particular hypothetical case, the range of T would fall between 100 and 200, as shown on the curve. *(Fig. 6.)*

This makes an ideal control system. The total felt tension can be changed at will by the operator, but will remain constant for all conditions of paper weight and machine speed. After it has been set, it can be forgotten except for periodic checks on felt stretch.

This experimental form of the wet drive is, of course, limited to sectional board machine drives. Although this is a comparatively new development under trial, there are three machines equipped with this special circuit and mill reports indicate excellent results.

The contribution of the went end helper drive for cylinder machines to the paper industry has long been recognized. Although it is not absolutely necessary for making paperboard, it is, nevertheless, one type of drive that can be added to an existing machine with many profit-building benefits. Greater tonnage is possible through the use of more open felts capable of more efficient water removal, and increased machine speeds may be permitted by releasing horsepower from the lineshaft prime mover. Lower cost per ton results because of increased felt life and because better water removal cuts steam costs at the dryer. Better quality control results from the wider choice of felts plus proper stretch and tension control. These factors improve control of finish over a greater range. New developments are in prospect, such as the experimental automatic control described, which will make the helper drive more automatic and less subject to human variables, and, therefore, even more effective.

Adirondack Fibre Corp. Erects Fort Edward Plant

Adirondack Fibre Corp. is erecting a demonstration plant for production of all grades of paper pulp at Fort Edward, N.Y. H. D. Wells, president of the company, said the plant would be operating in September. Mr. Wells, also president of American Paper Machinery & Engineering Works, in nearby Glens Falls, says the plant is being constructed to demonstrate the practicability of pulp manufacture through methods and equipment developed by APMEW.

The plant will be a 50-ton mill producing kraft, sulfite or long mechanical pulp at costs approximating $60 to $65 per ton, according to Mr. Wells. He says it will occupy only a 20x40-foot space, single floor and basement. Cost of setting up a plant this size, he explains, would be about $120,000, including electrical equipment, piping and machinery.

Heart of the Adirondack mill is the APMEW patented digester-pulping-refiner combination unit, expected to effect nearly a 100% yield.

The flow, for raw wood, is, in order, to a shaver, a hammermill, an "Aquabrusher" (combination pulper and beater), consistency and chemical proportioning regulator, high density chemical recovery thickener, and, finally, digester-pulping-refiner. Stock is then washed and screened for wet lap or paper machine. Mr. Wells says his machine has been developing for 20 years and got first commercial use in de-inking waste papers.

An advertisement in PULP & PAPER is ALWAYS WORKING—in every state and every region where pulp and paper is made in North America and in 40 countries around the world!

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Another exclusive feature of the Controlled Flow VICTORY BEATER* makes possible "tailored" fibre treatment!

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1. *Controlled Flow — uniform, positive fibrillation*
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AWARDS FOR SAFETY AND SERVICE IN WISCONSIN

1. APPLETON COATED PAPER CO., Appleton, Wis. State award for improved safety record over three years. L. to r.: E. V. Johnson, Safety Director of Kimberly-Clark Corp., Neenah; E. E. Erickson, Wisconsin Ind. Commission; Richard Mahoney, General Manager of Appleton Coated, receiving award; William A. Siekman, Personnel Director, and John Reeve, Mill Manager. 2. NICOLET PAPER CORP., West De Pere, Wis. L. to r.: Bert M. Lewis, General Manager, presenting Lord Elgin watches to Jacob Renkins, for 40 years service; Wm. Desmond, for 50 years; brother, Fred Desmond, for 57 years. In total of 147 years, none ever had lost-time accident. (Service prior to 1927, with American Writing Paper Corp., former occupant of the mill.) 3. GILBERT PAPER CO., Menasha, Wis. Safety award for second place in all industries of its class (based on man-hours worked). L. to r.: V. P. Johnson, Wisconsin Safety Council; Stanley Bruemmer, State Industrial Commission; Al Hildebrand and Arthur Pontow, Gilbert employes, and George M. Gilbert, President.

De-Ink Waste to be Processed by Bergstrom

The Bergstrom Paper Co. of Neenah Wis., hoped to begin construction, as this issue went to press, on a new $207,000 treatment plant to process waste from its waste paper de-inking plant. The mill makes 100 tons daily of book and catalogue papers.

Priority for 42 tons of reinforcing steel, 33 tons of structural steel, and 11 tons of steel pipe has been requested, said Nathan H. Bergstrom, president. The pipe will carry waste and also steam for plant heating.

The company de-inks paper waste and separates fibers from wastes containing clay. The clay substance will go through the new plant. Treatment will consist of a settling step, then vacuum filtering to consistency of a putty, reducing about 40 or 50 tons a day of waste and water to about 10 tons of solid substance. This substance will fill a lower lake shoreline for park purposes.

The 2-story, 43x93-ft. plant will be constructed of reinforced concrete block and will have a connecting reinforced concrete tunnel to the mill. It is to be completed by Oct. 1.

Superintendents Enjoy Sports and Field Day

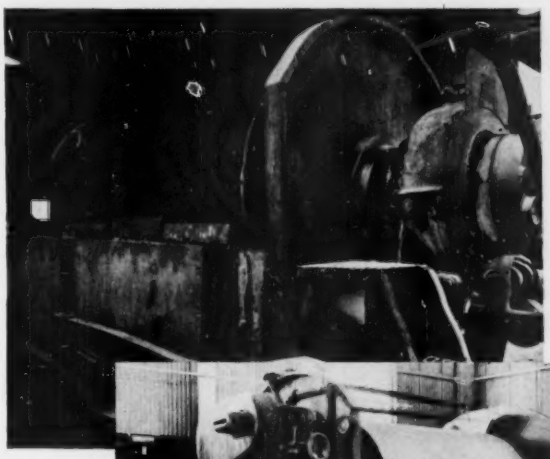
Michigan Division Superintendents held a successful Sports and Field Day, July 24, at the Kalamazoo Country Club, Kalamazoo. Participating were 115 members and guests, including 65 in the golf tournament. Others demonstrated their skill in lawn games.

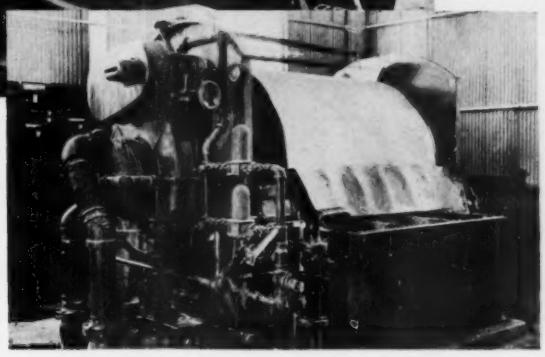
There were 26 prize winners. Their names follow: James Foxgrover (First Door), Tom Flanegan had low gross for superintendents, Bill MacArthur for salesmen, in golf. Sports and Field Day chairman was Alfred B. Perlick, Kalamazoo Vegetable Parchment Co.

OLIVER LIME MUD FILTER

The chemical filter designed to do a **chemical** filtering job

Study these two installation pictures of Oliver Filters. One is handling lime mud in a southeastern kraft mill; the other is handling potash in a west coast chemical plant. Note the similarity of design. Materials of construction will vary, of course, to meet specific conditions. But both are distinctly Oliver "Chemical" Filters.





As for "experience", we can point to nearly a hundred Oliver Lime Mud Filter installations in pulp and paper mills as well as to several thousand Oliver "Chemical" Filters in industry generally. Yes, there's plenty of "chemical" filtering experience back of the Oliver Lime Mud Filter you are planning to buy. Plenty of that necessary chemical filtering "know-how."

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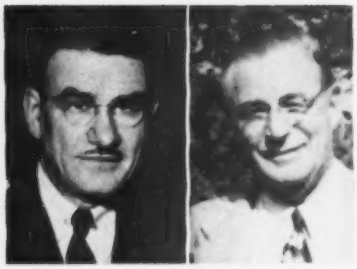
Personals



MIDWESTERNERS IN PROMINENCE:
E. A. CHARLTON (left), elected President of Central Paper Co., Muskegon, Mich., where many papermakers have had their start. Mr. Charlton was well known Consulting Engineer in his own right, in U.S. and Canada, before he went to Central in 1950, first as Consultant, later that year as Exec. V.P. and Mgr. He continues as Gen. Mgr. John Turnbull, former President, is now Chairman, and R. D. Terrien is new V.P. and Treas. Central makes kraft specialties.
T. H. "Hod" MULLEN (right) born and raised in Wisconsin, many years in paper sales in Wisconsin and Chicago, is Chief of Coarse Paper Section of new Pulp, Paper and Paperboard Division of the National Production Authority in Washington, D.C. In recent years Mr. Mullen had been Manager of Maui Paper Co. in Hawaii. In Washington he has been presiding officer at several industry meetings for NPA.

IN KALAMAZOO NEWS:
GEORGE H. GERPHEIDE, long-time President and General Manager of Hawthorne Paper Co., Kalamazoo, has resigned from that company but plans to continue in the paper or some affiliated industry. **WM. SLAVIN**, heading interests that purchased the mill, is President, but Mr. Gerpheide had agreed to stay on for a time during the changeover and left on best of terms with new owners.
ALFRED B. PERLICK (right), Superintendent for Stock Preparation, Kalamazoo Vegetable Parchment Co., was Chairman for one of the most successful Sports and Field Days held in late July at the Kazoo Country Club—115 attended.

CASSIUS M. BRYAN (left) elected Chairman of Board, and **F. NELSON BRIDGMAN** (right) elected President, of Strathmore Paper Co., fine paper mill at Springfield, Mass. They succeeded late George E. Williamson, who held both posts, and who died in Iowa while on a business trip, at age of 72, after 50 years in the industry. Mr. Bryan has been with Strathmore since 1901, Mr. Bridgman since 1910. Latter is a Director of Rising Paper Co.

GORDON ROOT (left), former Vancouver, B.C., newspaperman, who has been appointed Public Relations Director for Columbia Cellulose Co. (Celanese), whose new pulp mill is at Watson Island, B.C. **JOE WIG** (right), who has rounded out four years as Plant Engineer of the model and modern mills of Canada, LongLac Pulp & Paper Co., Terrace, Ont. He was a Navy officer in World War II and went to Canada from Kimberly-Clarke's Central Engineering.

JOHN HEDDICH (left) from Chicago, and **R. N. BRUCE** (right), out of Birmingham, Ala., were photographed by **PULP & PAPER**, while on the job as service men in charge of starting up the new Combustion Engineering-Superheater Inc. power and recovery boilers in the new Potlatch Forests Inc., kraft mill at Lewiston, Idaho. Mr. Heddich serviced the unusual new 200,000 lbs. power boiler which can burn hogged fuel, oil or pulverized coal and has special type of wood-burning spreader stoker for burning as much hogged fuel as possible in suspension. Mr. Bruce started up the 150 tons capacity black liquor burning recovery unit.

SAM RUSSELL (left), Manager of Seattle office of General Chemical Division of Allied Chemical and Dye Corp., and **WILLIAM CLINES**, Manager of Los Angeles office. Mr. Clines, a former Seattle manager for G.C., went north with R. M. Meiklejohn, Director of Pacific Coast operations for the division, to accompany Mr. Russell on a tour of many large pulp and paper mills in the Seattle territory. Mr. Russell has been with General Chemical 14 years, in production, technical service and sales, following graduation from Syracuse in chemical engineering. He recently worked out of Chicago in the Michigan pulp and paper industry. He is married and has two boys.

O. E. LARSON (left), veteran Engineer-Consultant representing The Emerson Mfg. Co., Division of John W. Bolton & Sons, has moved to the Pacific Coast, taking up residence at 4481 How St., Oakland, Calif. (phone, Humboldt 3-2291), and will represent those companies in the Far West, according to **AL C. CLARKE**, Sales Manager and Vice President. Mr. Larson, born in Sweden, came to the U.S. in 1902, attended Augustana College in Illinois and the University of Wisconsin, has been with Bolton & Sons since 1928, when they took over Emerson. He had been part owner of Claflin Co.
GERALD N. MADIGAN (right), new President of Johnson, Carvell & Murphy, paper mfgrs. representatives in Los Angeles, who handle International Paper's kraft papers and other lines. Born in Montreal in 1897, he became Manager of Paper Products Div. in 1950 and Vice President later that year.

JOHN L. RIEGEL (left), elected Chairman of Board, and **WALKER HAMILTON** (right), elected President, of Riegel Paper Corp. Mr. Riegel, President since 1936, continues as chief executive officer. Mr. Hamilton has been Exec. V.P. and Gen. Mgr. since 1945. Company has four Jersey mills and construction of new kraft and semi-chem mills at Acme, N.C., is well along now.

TWO INSTITUTE OF PAPER CHEMISTRY graduates recently affiliated with western firm: **T. R. PROBST** (left), Assistant to General Manager at Oregon Pulp & Paper Co., Salem, Ore., and Columbia River Paper Mills, Vancouver, Wash. He was with eastern mills since graduating from the Institute in 1939, was Assistant to Mill Manager of Oxford Paper Co., Rumford, Me., for two years immediately prior to accepting present position. **R. C. CRAIN** (right), General Superintendent of Columbia River Paper Mills, Vancouver, received Ph.D. from Institute in 1934, was Chemist with Whiting-Plover Paper Co., Stevens Point, Wis., four years; 13 years with Nekoosa-Edwards Paper Co. as Asst. Tech. director, Tech. Director, and Tech. Supt. at Nekoosa plant last four years.

Bingham

PRECISION BUILT FIELD PROVEN PUMPS

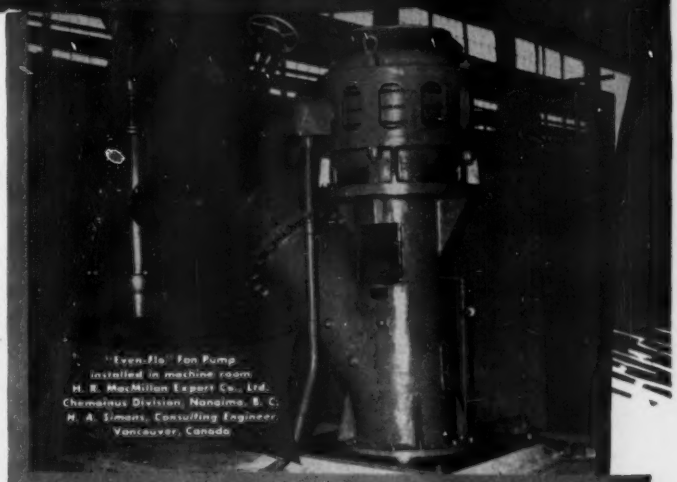
"Even-Flo" Pumps WILL NOT BECOME Airbound

Bingham "Even-Flo" Pumps discharge with an even non-pulsating flow regardless of variation in supply. An outstanding feature of the Bingham "Even-Flo" Pump is maintaining a constant liquid level at the suction no matter how varied the incoming supply may be.

Bingham "Even-Flo" Pumps are being used effectively in the Pulp and Paper industry for such services as: • Primary and Secondary Screen Transfer • Seal Pits for Barometric Legs • White Water and Stock Chests • Mill Sewage and Waste Liquor Sumps • Sludge Collecting Chests • Acid Sumps Fan Pump • Washers • Save-Alls

• • •

Bingham "Even-Flo" Pumps, like all Bingham products, are precision built in our new, modern plant. All rotating parts are dynamically balanced. All parts requiring close tolerances are ground on heavy duty precision grinders. Each part is subjected to rigid inspection by craftsmen who for years have been trained to follow Bingham's high standards of manufacture.



"Even-Flo" Fan Pump installed in machine room H. R. MacMillan Export Co., Ltd. Chemainus Division, Nanaimo, B. C. H. A. Simons, Consulting Engineer Vancouver, Canada

One of the heavy duty precision grinders in our new modern plant.

SEND NOW FOR "EVEN-FLO" FOLDER NO. 36
It gives detailed information on this remarkable pump.

Bingham DOUBLE VOLUTE RADIAL BALANCE PUMPS SINCE 1921

GENERAL OFFICES:
705 S.E. Main Street
Portland, Oregon

FACTORIES:
Portland, Oregon
Vancouver, Canada

Sales and Service Offices: BOSTON, MASS., 113 Broad Street • CHICAGO, ILL., 275 Old Colony Bldg., 407 South Dearborn Street • HOUSTON, TEX., 1206 Union National Bank Bldg. • MIDDLETON, OHIO, 505 Federal Savings & Loan Bldg. • NEW YORK CITY, N. Y., 611 Graybar Bldg., 420 Lexington Ave. • PITTSBURGH, PENN., 102 Mt. Lebanon Blvd. • SAN FRANCISCO, CALIF., 420 Market St. • SEATTLE, WASH., 316 Joseph Vance Bldg., 1402 Third Ave. • ST. LOUIS, MO., 2533 Salem • ST. PAUL, MINN., 205 South Robert St. • TULSA, OKLA., 200-206 N. Denver St. • VANCOUVER, CANADA, 3550 E. Broadway.

Personals

SOUTHERN NOTES

MARTIN "MORT" MORTENSON, 20 years with Kimberly-Clark, is the new plant engineer at the Memphis, Tenn., plant. Graduate of the University of Wisconsin, he had engineering and operating experience at Neenah, Wis., Niagara Falls and Memphis mills. *JOHN HOLLEY*, in design, and *BOB WICK*, in maintenance, are new engineers at Memphis. *BOYD PAYNE*, new industrial engineering superintendent at the Memphis, Tenn., cellulose wadding mill of Kimberly-Clark Corp., went there from the Niagara Falls plant of K-C. He has been with the company 11 years. One of his first avocational activities in Memphis was to design the set for a Memphis Little Theater production.

MISS HELEN PHILLIPS, president of Phillips Lbr. Co., Meridian, Miss., visited Gulf States Paper Corp., Tuscaloosa, Ala. The company is a pulpwood dealer for the mill. Miss Phillips succeeded her father, the late O. P. Phillips.

ROBERT C. SUTTLE, district engineer for The Reliance Electric & Eng. Co., has moved his office from 202 North Washington St., to 214 Schuler Bldg., in El Dorado, Ark.

J. M. TEMPLE, Foxboro Co. representative at Baton Rouge, La., has moved his office to the Louisiana National Bank Building. It formerly was at 115 N. 19th St.

T. LAWRENCE ("LARRY") JOHNSON has been named sales agent for the industry south by Tyer Rubber Co., Andover, Mass. His headquarters will be in Birmingham, Ala.

PAUL W. SCHOEN, for the past six years executive secretary of Forest Farmers' Assn., Valdosta, Ga., became Washington (D.C.) representative of the American Paper & Pulp Assn. Sept. 1. A forestry graduate from Penn State in 1924, he moved south in 1937.

ERNEST DAVIS recently was promoted to assistant manager of the Timber Division at Rayonier, Fernandina, Fla., his brother *STUART DAVIS*, taking his vacated spot as assistant to the manager in charge of Land Management.

JOHN DAVIS is president of the Coosa River Sportsman's Assn., formed at Childersburg, by employees of the Coosa River Newsprint Co., Coosa, Pines, Ala. The club will foster conservation of wild life and promote outdoor recreation. The club holds a lease on 8500 acres of land owned mostly by the company and fronting on Mitchell Lake. Other officers include: Bob Snavely, first vice president; Charles Allison, second vice president; Paul Smith, secretary; and, Miss Mary Luker, treasurer. Directors include J. E. Rainwater, Arthur Wakeman, Lyle Kalenbach, Edgar Cooper, and Jick Buck.

W. H. ("HAMP") GARLAND, JR., chief electrician of Sonoco Products Co., Hartsville, S.C., has received his 25-years' service pin from the company, with James L. Coker, Sonoco president, officiating.

G. W. PHILLIPS, editor emeritus of Champion's *Log*, one of the nation's first employe publications, died at his Canton, N.C., home, June 14. He joined Champion as a brickmason in 1906, graduating to personnel work, and then editing in 1911, became "editor emeritus" in 1947.

JESSE RAMBO proved tops in golf in winning the tournament and ranking as medalist at the S&V Tournament, an annual event sponsored by Herb Edelman, manager for Sinclair & Valentine Ink Co.'s plant at St. Regis Kraft center, Pensacola, Fla. George M. Snyder was runner-up and Bill Meloy received the consolation prize. Andy Downey was winner of first flight, with M. N. Richards as runner-up; and Jack Anderson led the second flight, with Harold Rivers as runner-up.

R. C. "SLIM" BULLOCK, pulp superintendent, Ecusta Paper Corp., Pisgah Forest, N.C., division of Olin Industries, recently returned from a two-week tour of active duty with the Navy at Norfolk, Va. He is a former chairman of Southeast Superintendents.

THOMAS M. HOLDEN, who has been with the corrugated paper industry since 1928, has been appointed general manager of the new $1,000,000 converting plant of National Container Corp. now being erected in Dallas. James J. Parks has been named plant manager, Lionel M. Goldberg, vice president of the company, announced.

LEON L. BERTRAM has been named assistant manager of the Virginia Cellulose plant of Hercules Powder Co. in Hopewell. He has been operating supervisor since August, 1950.

MIDDLE WEST NOTES

WILLIAM L. KEADY, of Menasha, Wis., has resigned as president of Marathon Corp., because of different management views, and *CLARK EVEREST*, of Rothschild, Wis., has taken over again as president as well as chairman.

GEORGE T. STANSBURY, a director of Thilmany Pulp & Paper, and its secretary and assistant treasurer until retirement from that post in 1935, died last month at the age of 70, in Los Angeles. He had been ill about a year; had lived in the West since 1937. Born in Appleton, he had been with Thilmany since 1911.

FREDERICK S. SEABORNE, chief mill manager, Kimberly-Clark Corp., was chief speaker at the K-C-A picnic this year at Lakeview park, Neenah.

LYALL STILP, general purchasing agent for Kimberly-Clark, was honored by receiving the Brueggemann award for "advancement of purchasing" from the Milwaukee Assn. of P.A.'s.

ELMER FREDERICK SOMMER, 48, Beloit Iron Works sales engineer, died suddenly from a heart attack, July 6. When stricken, he was playing golf with an out-of-town guest. Mr. Sommer was born in Beloit, Wisconsin, May 23, 1903. His 32 years of service with Beloit Iron Works began in 1919.

Kimberly-Clark Corp., Neenah, Wis., lost two top executives recently: *RALPH H. KEHL*, 42-year-old director of industrial relations, and also a member of the corporation's top management committee, was fatally injured in a tragic automobile accident on July 18. Mr. Kehl was a mile and a half from Dynes Country Club, and was driving there to attend a company engineers' picnic when his car was struck broadside by another car at an intersection. Starting as an engineer with the company in 1932, he was personnel supt. at the Niagara Falls, N.Y., mill, later manager of Badger-Globe and Lakeview mills in Neenah.

LOUIS C. FLECK, superintendent of basic research for Kimberly-Clark, died July 20, at his brother Alfred's home at Allouez, near Green Bay, Wis. Dr. Fleck, graduate with doctorate from the U. of Wisconsin in 1927, worked at the U. S. Forest Products Lab., Madison Wis., until 1929, when he became a staff technician for K-C. He was 56, was born at Kaukauna, Wis.

D. K. BROWN, president of Neenah Paper Co., Neenah, Wis., has been honored by the twin cities of Neenah and Menasha by being appointed national councillor for their joint Chamber of Commerce. His duties will require frequent trips to Washington, D. C., for the chamber.

HENRY MILBOW, paper mill tour foreman, Kimberly-Clark Corp., Niagara, Wis., recently completed 45 years of service with that company.

F. H. WEHRLING, mill manager, Neenah, Wis., mill, Kimberly-Clark Corp., announced the Kleenex-Sanek department of that mill has passed 1,000 safe days—its previous record was 1,123 days without lost-accident and it expects to better that mark.

W. R. KELLETT, assistant v.p. Kimberly-Clark, won the A-Boat class race in his *Last Chance* at Nodaway Yacht Club, defeating boats skippered by Jack Kimberly and Bob Kimberly. Eric Bergstrom in his *Enigma* won in D-class.

CLAUD R. BISHOP is superintendent of paper mills, Urbana, Ohio, division of Howard Paper Mills, Inc. He succeeded Truman B. Mathers.

JOHN L. HAIN, treasurer of The Gardner Board and Carton Co., Middletown and Lockland, O., and a top official of the company since 1920, has retired. He was succeeded by *CALVIN F. LLOYD*, assistant secretary and assistant treasurer. Colin Gardner III, vice president, operations, announced recently appointment of Deane A. Hodapp as a senior industrial engineer at Middletown, and Harold J. Voorhis has been promoted to the position of credit manager for Gardner.

PAUL F. DICKMEYER, secretary and assistant controller of the Fort Wayne Corrugated Paper Co., Indiana, has been elected to membership in the Controllers' Institute.

DR. HANS JOHN, 27 years with Kimberly-Clark of Neenah, in research and technical department, has retired.

COLON BROWN, who has been manager of the Mobile (Ala.) mill of National Gypsum Co. has been appointed general manager of the Kansas Ordnance Plant, Parsons, Kans., according to announcement by L. R. Sanderson, executive vice president of gypsum. The National Gypsum Co. has a management contract for the Kansas plant. Mr. Brown has been succeeded as manager of the Mobile plant by George Cook.

EASTERN NOTES

CHARLES G. RAEBURN has been promoted to administrative assistant in the woods at Brown Co., Berlin, N.H.; *LEO P. LANDERS* was advanced to assistant superintendent of the Riverside mill, and *CHARLES E. RAY* to tour foreman at Riverside. All are veterans of Brown.

MASON F. FORD, a vice president and director of St. Regis Paper Co., died from a heart attack at Sao Paulo, Brazil, July 30. He had served as manager of South American operations for St. Regis for the past 23 years.

EARLE W. LEAMAN is new assistant paper mill superintendent at Marinette Paper Co., Fort Edward, N.Y., and *WILLIAM S. SPILLER* is new technical control director at South Glens Falls.

JAMES L. SPENCER, vice president and director of sales of Olin Products Co., Inc., announces that permanent headquarters for the newly-formed company have been established at 655 Madison Ave., New York City.

H. A. HORSTMANN, G. E. OSTERHELDT, IVES GEHRING, H. E. KARBERG and *J. J. ROGERS* were appointed as a nominating committee to select officers for election at the N.Y.-Canadian Supts. Division meeting at Saranac Lake, N. Y., Sept. 6-8.

MERRITT W. McGAHAN has been appointed research assistant to the Research Foundation of the State University of New York, and will work on chemical debarking studies recently initiated at the State University College of Forestry, Syracuse, N.Y. His appointment is announced by *DR. EDWIN C. JAHN*, director of research at the college.

P. M. LODDENGAARD, former president of United Board & Carton Corporation, announces his resignation from active company affairs, in a letter to Morris Kay, new chairman of the board.

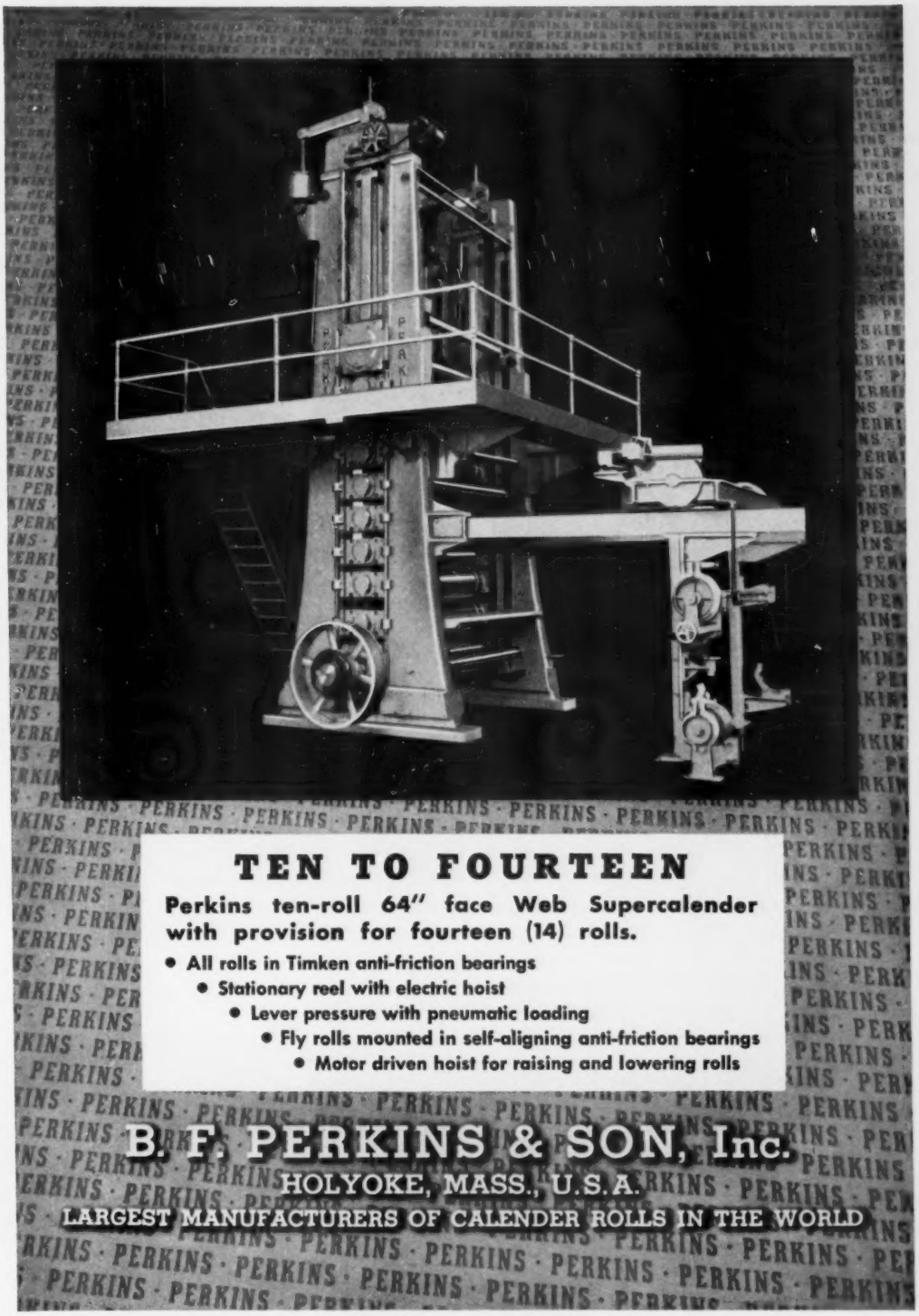
WILLIAM S. STUHR was recently named president of United as a result of a change in corporate stock ownership.

GLEN SUTTON, Sutherland Paper Co., Kalamazoo, national president of the Supts. Assn., has informed *GLEN (TINY) RENEGAR*, Container Corp. of America, Philadelphia, chairman of the Pennsylvania-New Jersey-Deleware Division, he will attend their meeting, Sept. 28-29, at Pocono Manor, Pa.

ERNEST PERRIGO has succeeded *WELLS FORBES* as superintendent of the Carthage, N. Y., kraft mill of St. Regis Paper Co. Mr. Perrigo has been assistant mill superintendent since 1948, and Mr. Forbes' retirement follows 35 years' active service with the company.

DR. JOHN H. TRUESDAIL has been appointed technical service manager of Olin Products Co., Inc., New York City, an affiliate of Eucusta Paper Corp. at Pisgah Forest, N.C. He is a native of Redlands, Calif., and has been in the cellophane division of DuPont for the past 13 years.

H. C. MILTON has been named assistant district sales manager of its industrial chemicals division at Boston, Mass., by American Cyanamid Co., New York City.



TEN TO FOURTEEN

Perkins ten-roll 64" face Web Supercalender with provision for fourteen (14) rolls.

- All rolls in Timken anti-friction bearings
- Stationary reel with electric hoist
- Lever pressure with pneumatic loading
- Fly rolls mounted in self-aligning anti-friction bearings
- Motor driven hoist for raising and lowering rolls

B. F. PERKINS & SON, Inc.

HOLYOKE, MASS., U.S.A.

LARGEST MANUFACTURERS OF CALENDER ROLLS IN THE WORLD

No ONE chain serves every purpose

LINK-BELT offers the right chain

. . . engineered for your requirements

Don't settle for a "cure-all" chain to handle every job. Different types of chain have different characteristics. That's why Link-Belt makes the most complete line of chains in the world. Our engineers can recommend the exact type of chain to fit your particular needs . . . the one that does your job best.

Equally important is your assurance that *any* chain with the Link-Belt name will give you longer chain life. Exact control of raw materials and processes . . . plus manufacturing refinements add up to the highest standards.

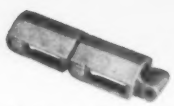
LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, factory branch stores and distributors in principal cities. 12,358-B

LINK-BELT

CHAINS AND SPROCKETS

Barked logs are conveyed from hydraulic barker to whole-log chipper rapidly and at low cost by means of Link-Belt multiple-strand chain conveyor, using Link-Belt H-124 malleable iron chain.

Typical chains from the complete LINK-BELT line



Roof-top pintle chain—for transfer conveyors, each strand presenting a sturdy, moving ridge.

Class C combination chain — popular, durable, low cost design for elevators, conveyors.

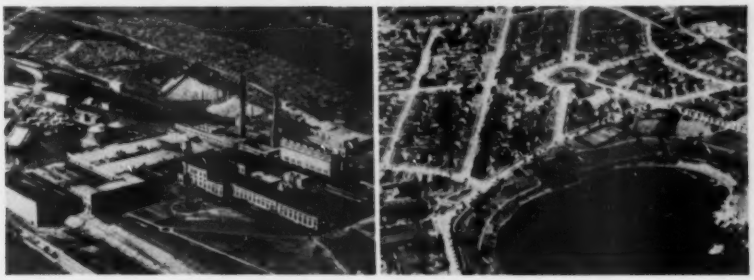
Class SS bushed roller chain with offset sidebars —for heavy drive service at moderate speeds.

Class H drag chain—for drag conveyors, handling sawdust or other refuse in runways or troughs.

NEW IDEAS AT "KAP"

ALSO A NEW WADDING MACHINE

IMPORTANT FIGURES in recent expansion program at Kapuskasing, Ont., are CHARLES H. SAGE (standing), President of Spruce Falls Power & Paper Co. and Vice President of Kimberly-Clark Corp., and G. M. MINARD, Mill Manager for Spruce Falls. They are shown discussing student aid program of scholarships to Kapuskasing and other students, a program initiated in 1946, and representing investment of $47,000 to date.



AIR VIEW OF SPRUCE FALLS MILL (at left) and (at right) the town of "Kap" on "The Circle."

Kapuskasing, Ontario, where Kimberly-Clark Corp. of Canada operates its big crepe wadding and tissue mill and its associate Spruce Falls Power & Paper Co. manufactures sulfite pulp and newsprint, is today the scene of new expansion.

A $5,000,000 project designed to increase newsprint production by more than 12,000 tons a year has been announced by C. H. Sage, president of Spruce Falls, this being a sequel to a long-term development program started at "Kap" in 1947. The three paper machines are to be rebuilt and the whole mill modernized.

The Kimberly-Clark activity has been due to installation of a second creped wadding machine to double the mill's capacity. The new machine, built by Dominion Engineering Co., at Lachine, Que., while not as wide as the newest installations at K-C's Lakeview and Memphis plants, will hold its own with any in speed and is expected to produce 30 tons of wadding daily to be marketed through affiliated Canadian Cellucotton Products Co., Niagara Falls, Ont., now in the midst of expansion on its own account with installation of seven additional interfolders; a new automatic cartoning machine and other equipment.

New Materials Handling

In materials handling, changes at Kapuskasing and Niagara Falls have been accompanied by some new ideas that make these plants among the most completely mechanized in the Kimberly-Clark group.

Because it was decided to go to large-size hard rolls in getting ready for the new machine, handling methods had to be revised. Specialists from both materials and engineering departments went to work on the problem, results have relieved still further the need for hand work. Hard rolls are picked up, transported by lift truck and loaded without a hand touching them. They aren't even loaded on pallets. Cores can be moved, stored, issued and shipped without anyone touching them except the man who puts them on the winder and the operator who takes them off the inter-folder or pad machine.

All the equipment centers around the new creped wadding machine, which is similar to the original 134 inch (wire width) No. 1 (Dominion) machine.

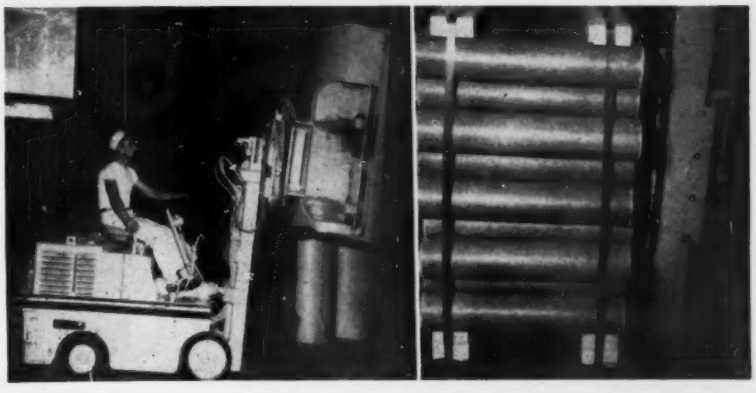
The machine can generally be compared to Badger-Globe's No. 4 with improvements. It is designed for over 2,000 feet a minute. The air drying and dust control equipment is by Ross Engineering.

Stock preparation is by a new Hydrapulper. A proportioner combines sulphite and bleached sulphate pulp. Work has been in progress to increase capacity of the bleachery, eventually to handle about 65% of total pulp requirements of both machines.

The Hydrapulper was made at Alexander Fleck, Ltd., of Ottawa, the cycliner by William Kennedy and Sons, Ltd., Owen Sound, and the repulper by Waterous Ltd. Putting in the second machine, even though the machine room was planned for it when built in 1945, made it necessary to enlarge the building.

Guy Minard is manager of the Kimberly-Clark of Canada unit as well as the Spruce Falls mill. John Truscott, is superintendent.

MECHANIZED MATERIALS HANDLING at "Kap". Left is new type Clark tractor for loading rolls; right, a load of cores, handled and stored with almost no hand work.



MORE ABOUT SPRUCE FALLS

A visit to Kapuskasing, home of Spruce Falls Power & Paper Co., as made by a PULP & PAPER's Canadian associate editor recently, is something to remember. There's no town just like it in the industry.

It's away up in the heart of the clay belt of northern Ontario, with the reach of Hudson Bay only 150 miles away, and

on a map it looks like a tiny blob in a sea of space, a very long way from the tumult of metropolitan life. And so it is.

But for all its isolation, "Kap," as the home folks affectionately call the place, is a remarkably self-contained and happy community, a lively center of social as well as industrial life.

There are several ways to reach "Kap"—by Canadian National train from Winnipeg in the west or Montreal in the east or by the Temiskaming & Northern Ontario Railway from North Bay on the Canadian Pacific's main line to the south. Or you can fly.

Kapuskasing's geographical location is dramatic, and you sense that to the full when you approach the town by plane. Mile after mile you ride the sky with a single stop at Porquis junction (jump-off place to Abitibi's Iroquois Falls mill). Below you stretches an empire of black and white spruce splashed here and there with golden poplar. Occasionally you glimpse a French-Canadian's farmhouse in a clearing.

Some of the Equipment

Improvements have been made steadily. No. 1 newsprint machine has four size 3A and one size 3A-100 Bird paper screens. The other three machines each have four size 3A Bird screens. There are also some Vickery doctors installed on these machines.

Pulpwood is delivered to Spruce Falls by water, rail and truck. An Ingersoll-Rand jackladder, during the open water season, lifts the 8 and 16-foot logs from the river and conveys them to the slasher. During winter wood is delivered by rail in 4 ft. lengths.

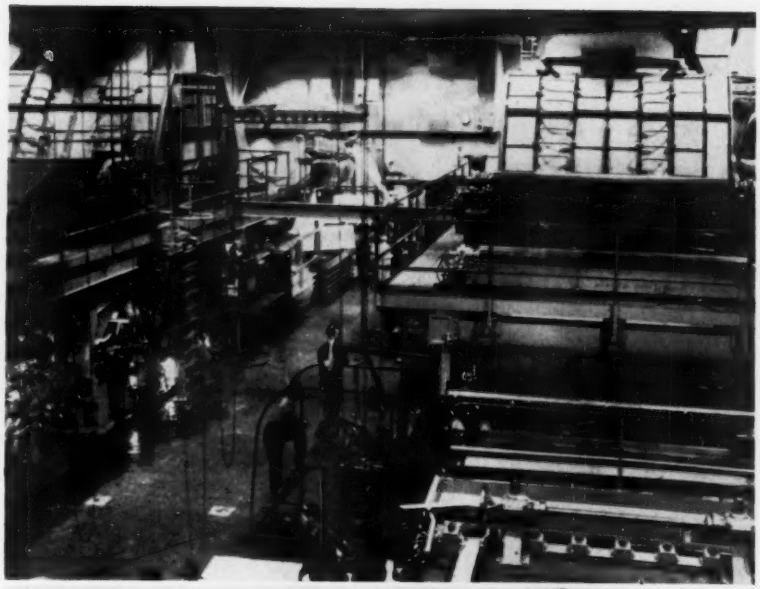
After slashers, wood is conveyed by Link-Belt chain to five Waterous trunnion type barking drums. As much as 1500 cords can be debarked daily.

There are two boiler houses. One has four pulverized coal furnaces with 1000 hp. Kidwell boilers. In the other are four 500 hp. Babcock & Wilcox units for burning bark and waste wood. There 10,000 kw. electric boilers use excess electrical power during high water. The mill's normal steam production is about 7,000,000 pounds per day.

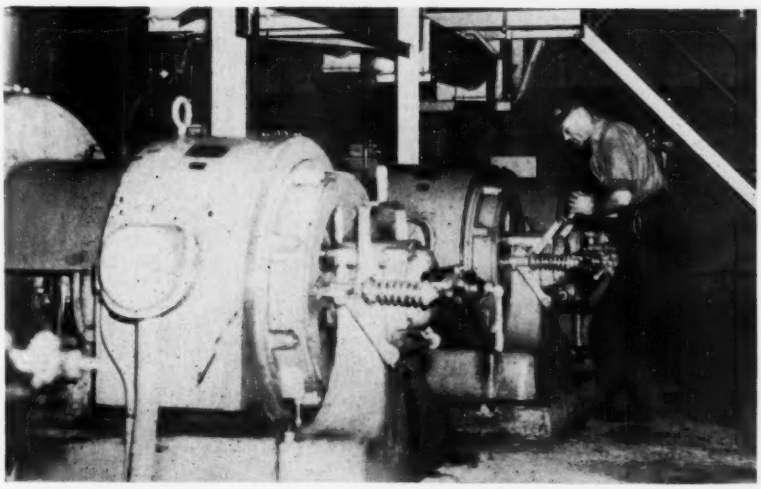
There are 22 grinders, 11 Waterous and 11 Dominion Engineering units, of the continuous magazine type. The town of Kapuskasing, with a population of 5000, uses only one-fifth as much power as that consumed by one grinder motor. Waterous and Voith fine screens remove smaller slivers which are refined and accepted stock is thickened on Oliver filters and deckers.

In the sulphite mill, are Carthage chippers, eight digesters, built by Dominion Bridge, Manitowoc, and John Inglis Co. They are 15' x 48', lined with Stebbins brick. A propeller apparatus called a chip packer is designed by Spruce Falls' engineers and built by Babcock & Wilcox.

In the screen room are Sherbrooke Machineries knotters, Bird screens, PML dryer machines. Bales of pulp are weighed by Merrick meters, loaded into freight cars for K-C book and wadding mills.



NEW DOMINION ENGINEERING—built creped wadding machine at Kimberly-Clark Corp. of Canada and (below) the addition on Mill Building.



ONE OF THE NEW BAUER REFINERS adapted to the operations in both sulfite and groundwood at Spruce Falls.

built by

DOMINION ENGINEERING COMPANY LIMITED

MONTREAL • TORONTO • WINNIPEG • VANCOUVER

North Carolina Mill

5-YEAR IMPROVEMENT PROGRAM

Initial operation of an electrostatic precipitator this summer on its new recovery plant will be merely the climactic phase of a broad improvement program which the Halifax Paper Co., at Roanoke Rapids, in northern North Carolina, has carried through since the end of World War II. Beginning with woodyard expansion in 1946 and 1947, it included addition of a rebuilt machine, a new chipper and various new washing and screening units.

But early in 1951 the company surged forward with another phase to meet the continuing critical situation—announcing a new $5,800,000 expansion program at the Halifax mill to be completed by December of 1952 by means of an RFC loan. This program includes a new Beloit 246-inch Fourdrinier, new coal or oil-fired boiler, of 45,000 pounds, and high density pulp tower. The machine will have pressure-type headbox and 33 dryers, with Ross-Grewin ventilation.

The Halifax mill is associated with Albemarle Paper Mfg. Co., of Richmond, Va., and both are producers of kraft and kraft specialties. They are operated by organizations headed by F. D. Gottwald, president of both companies.

Halifax will average about 415 tons daily of sulfate pulp. It will convert a minor portion to kraft paper, wrapping, notion bag, butchers kraft and alphalt kraft. It will continue as an important pulp supplier to Albemarle. Before the improvement program was begun, Halifax was making only 150 tons of sulfate pulp daily. Albemarle, in turn, serves as sales agent for Halifax in Richmond, the target center of a vital Southern paper market.

The Halifax improvements, therefore involved the welfare of both mills. The foresight of their management assures both mills an important place in the Southern industry.

During a visit at Halifax, the various phases of the long-term improvement program there were shown to a PULP & PAPER editor by H. H. Ellerson, Jr., general superintendent, and C. L. Wills, plant engineer. These men, and K. F. Adams, resident manager; K. D. Running, pulp mill superintendent; R. S. Bell, paper mill superintendent, and S. A. Durham, purchasing agent, are justly proud of a program which in actuality began with the reworking of the wood storage and handling facilities.

At that time, through the use of Caterpillar tractors and road pans, ten thousand yards of old bark and spongy earth were removed from the top of the yard and replaced with seven thousand yards of sand after regrading for proper drainage. Three new large conveyors were added to the existing single conveyor equipment in order to make about twice as much storage area available. The yard now has storage space for approximately 15,000 to 18,000 cords. Also, at this time, two 30-ton Lima Cranes were added to the yard equipment. One of these cranes is used exclusively for unloading wood trucks on which two loads of approximately one and one-fourth cords of wood each are loaded, on slings in the woods. The other crane is equipped with an Owen orange-peel grapple used for taking wood out of storage into the conveyor system and unloading rail car wood into the conveyor system.

Approximately 65% of the wood is received at the mill by truck; the rest by rail. The conveyors carry the wood to a single 12 ft. x 45 ft. barking drum from which the barked wood goes to a Carthage four-knife 88-inch face chipper driven by a 250 hp. motor which gives the chipper a speed of 315 rpm. The average production through the chipper is 21 cords per hour. A new addition is a D. J. Murray 110-inch ten-knife chipper driven by a 500 hp., 450 rpm. General Electric motor. Behind the chipper is a single Rotex screen which will selectively screen approximately 450 cords of wood per day. The rejects from the Rotex screen pass through a rechipper and are returned to the screen for further selecting. The accepted chips are then carried to the chip bin above six 1000 cu. ft. digesters and two 3000 cu. ft. digesters. The bark from the barking drum is conveyed to a Keeler water-tube boiler which has a Hofft bark burning sloping grate furnace.

The old and inadequate bark storage and feeding system was improved at this time by adding a steel bark hopper of Halifax design and a Hofft bark feeding machine. This boiler has a capacity of 26,000 lbs. of steam per hour. At this time the woodyard operates three seven-hour shifts and can be run with five men (including the bark boiler operator) and a foreman.

Washing and Screening

In the spring of 1948, work was begun by C. M. Guest & Sons on a new washing

HALIFAX MILL WOODYARD showing one crane piling for storage; one unloading from cars. Bark burner boiler and barking drum are in right center. About half of mill's storage area is shown.

NEW COMBUSTION ENGINEERING-SUPERHEATER INC. recovery boiler is housed in this semi-open brick building. Pulp mill shows in background. Liquor recovery is up to 245 tons per day.

a Cure for POOR CIRCULATION...

Poor circulation is not a minor ailment . . . if your chests are involved and complications set in. What to do about it? There is one remedy that is particularly successful and that is the installation of Warren Propeller Type Circulating Pumps, engineered and built to handle your particular job. While many mills have the same basic problem of circulation and quick mixing, either in new or existing chests, yet the cycle of operation and operating conditions differ enough to warrant individual attention.

Warren Pulp and Paper Mill engineers are well qualified, through training and many years' experience in the field, to logically evaluate your circulation and mixing problems and suggest ways and means of accomplishing desired results. This applies to all chemical stocks, groundwood, half stock in rag mills, or dirty filler stock in board mills. It may involve horizontal rectangular, vertical cylindrical, or any other type of chests.

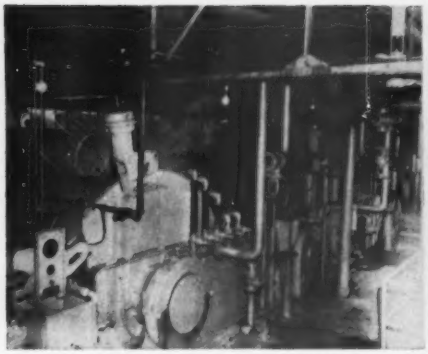
Whether it is a question of chest circulation, mixing, or any other pumping service in a pulp or paper mill, it will pay you to consult Warren.

SEND FOR WARREN STOCK PUMP BULLETINS

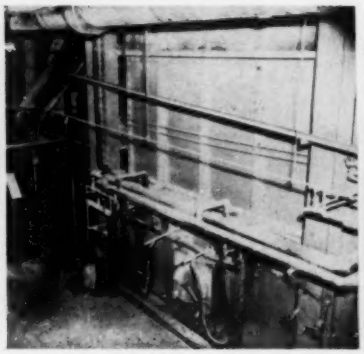
PP-17

WARREN PUMPS

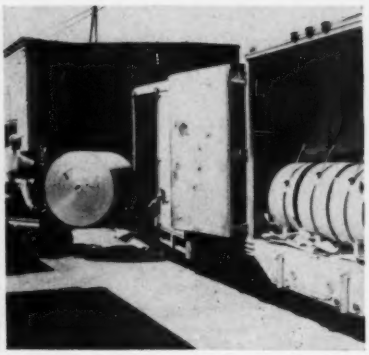
WARREN STEAM PUMP COMPANY, INC., WARREN, MASSACHUSETTS



NEW IMPROVED PAPER MACHINERY CORP. washers at Halifax mill.



COMBUSTION ENGINEERING recovery boiler at Halifax showing two liquor sprays (operate at 55-60% solids).



PAPER BEING LOADED on Trailmobile railroad car by Clark lift truck at Halifax.

and screening installation. Engineering for this project was by J. E. Sirrine Co.; and, also, at this time, the installation of a 126 inch Kamyr wet lap machine began. The first part of this work, which included the installation of the Kamyr machine and the installation of an 8 x 14 Impco thickener, was completed early in the summer of 1948. At that time, washing consisted of one 8x12 Oliver United ring-valve, two stage, rotary washer; and, until the completion of the screening installation, the thickener was used as a rewasher by adding hot water showers and a temporary filtrate tank and pump. At that time, also, screening consisted of one Impco rotary knotter, two Bird centrifugal screens for primary screening and final screening done by a 24 plate flat screen.

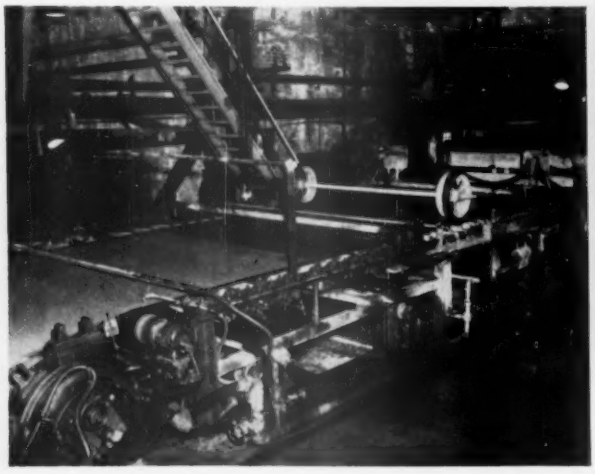
New Recovery Unit

In July 1948, work was temporarily halted on the washing and screening, and attention was concentrated on the installation of Combustion Engineering-Superheater Inc. recovery unit. This boiler is housed in a semi-opened brick building, seven stories high, with Transite weather guards and Transite siding enclosing the operating areas. Liquor from the washers is evaporated by a seven body four-effect steam evaporating system and sent to the recovery boiler at approximately 45% solids. Passing through a Murray cascade evaporator at the back of this boiler the liquor enters the fuel sprays at approximately 55% to 60% solids. Recovery of liquor has been accomplished up to 245 tons per day through this boiler. On order is the Koppers electrostatic precipitator. Construction work on the recovery boiler was done by C. M. Guest & Sons; boiler erection by Combustion Engineering-Superheater Inc., and engineering by J. E. Sirrine Co.

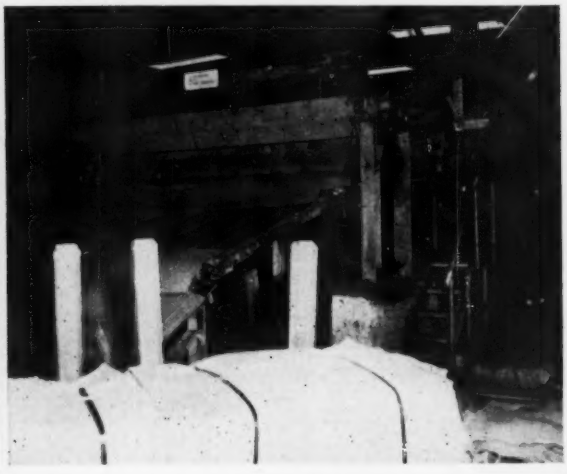
Boiler erection was accomplished in approximately four months and the boiler went into operation at the end of June 1949, replacing four rotary type recovery furnaces. Work was resumed by mill construction crews on the new screen room and other installations in the winter of 1949 and was completed in July of that year. These consisted of an Impco deknotter ahead of the Oliver washer and four Impco centrifugal screens fed by a Goulds 14 inch, 6300 gpm. fan pump from the washed stock chest through a Johns-Manville Chemstone headbox. Three of these screens with .100 cut plates are used for primary screening, the rejects from which pass through a flow box to the fourth screen equipped with .080 cut plates. The rejects from these screens are sent to the original 24 plate flat screen for final screening. A later installation is a new Impco 14 plate flat screen with Dunbar drive to take the place of the above mentioned flat screen. This new screen is equipped with .014 slots. Also added are one 24 inch and two 8 inch Weiner refiners which at one time were used for refining screen rejects. The installation of a Jeffrey swing hammermill and the two 8-inch Weiner refiners for refining of deknotter and screen rejects were latest steps here.

In Jan., 1950 work was resumed by the Halifax crew on the washer installation. The original washer liquor tank was increased in height from 16 ft. to 30 ft. and two new intermediate liquor tanks, 25 ft. x 30 ft. and 27 ft. x 30 ft., were added. Two additional Impco 8 x 12 rotary washers were installed and the original Oliver washer was left as a two stage washer which now gives the equivalent of four stages of washing. The original engineering by J. E. Sirrine Co. was followed on both the washing and screening installations, with minor modifications as needed by Halifax engineers.

NO. 1 PAPER MACHINE, maximum trim 94 inches, at the Halifax Paper Co., was rebuilt. Additions included new longer Fourdrinier.



THIS 126-Inch KAMYR WET LAP MACHINE was an addition at Halifax Paper Co., which supplies pulp to associated Albemarle mill in Richmond.



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More color makes more business ...for your customers and you

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A STAINLESS LINED DIGESTER
Experiences in Sulfite Service

By BRYAN L. RAUSCHERT
Resident Engineer, Rayonier Inc., Port Angeles, Wash.

Ed. Note—A. O. Smith Corp. and Rayonier are now assembling, in sections, and installing, a new and unusual sulfite stainless steel lined digester at the Rayonier mill in Port Angeles. This is an authoritative description of how it differs from an earlier one there (described in Feb. 1947 issue, PULP & PAPER):

1. The shape of the head is hemispherical.
2. The head is lined with 7/64 in. thick Hastelloy "F."
3. The lower half of the cone is provided with a lining 3/16 in. thick.
4. The bottom flange is forged steel covered with a deposit of weld of Type 316 steel instead of build up construction with the lining spot welded on. This more rugged design should prevent the acid getting behind the gasket and causing pitting such as has been described for our present digester.

In comparing a stainless steel lined digester with the conventional brick lined digester the following points are important:

1. For the same size shell, the usable volume of the stainless steel lined digester is 15% more than that of the brick lined type.
2. When starting up a cold digester the cooking curve can be used for a hot digester.
3. Lost time and expense for the periodic replacement of brick linings is not necessary.
4. The original cost of the lined vessel is considerably above that of the brick lined type.
5. The ultimate life and the cost of the maintenance of a lined vessel have not yet been definitely established.
6. Experience at one mill may not be duplicated at other mills where cooking conditions are different.

Our experience to date with a stainless steel lined digester in sulfite service has been very encouraging. We believe that for our operation this is the most economical type of construction. We do not believe that this would necessarily be true for another mill. An answer can be had only after a careful study for each installation.

A search for a type of digester construction which would be more economical than the usual brick lined construction resulted in installation of a stainless steel lined digester at the Port Angeles Division of Rayonier, Inc., which went into service on Jan. 25, 1947. This vessel consists of a welded steel shell lined with a layer of Type 316 stainless steel 7/64 of an inch thick. Fabrication of the vessel was by the A. O. Smith Corp. (See PULP & PAPER, Feb. 1947, for photographs and details.)

Maintenance on the lining has caused the loss of the use of the digester for approximately 125 hours. On one occasion shortly after the digester was placed in service a defect in a lining weld allowed the cooking acid to cut a hole through the mild steel shell. A repair made by welding proved to be permanent.

Much of the maintenance during the first year was the repair of small defects resulting from fabrication techniques. Some maintenance has been necessary at the bottom opening and along some of the major welds. All repairs have been made by arc welding and this type of repair appears to be permanent.

The only major corrosion problem to date has been the corrosion of the lining of the top head. The formation of a scale on this surface has accelerated this corrosion. An alloy which will not collect scale and which will not corrode has been found (Hastelloy "F") and the head is now being lined with this alloy.

It appears that the lining of this digester can be kept in good condition from this point on with very little lost operating time. Experience to date has been satisfactory and is encouraging. A second lined digester is now on order. Changes in the design have been made which should eliminate most of the trouble experienced with the first digester.

Description of Digester

The analysis of the type 316 alloy used in the digester at Port Angeles was: 18.0% chromium; 12.0% nickel; 2.5% molybdenum; .03% carbon; 2.0% max. manganese. The method of fabrication used by A. O. Smith was to spot weld the stainless steel sheets to the mild steel shell plates and to seal weld around the edges of the stainless steel sheets before forming or rolling the sheets.

The shape and size of the digester is approximately the same as the rest of the digesters at Port Angeles except for the head and the cone. The inside diameter is 15 ft. The overall height is 56 ft. 4 inches. Instead of the conventional dome head this digester has the flanged and dished form commonly used for unfired pressure vessels. The crown radius is 14 ft. 2 in. and the knuckle radius is 30 in., the ratio being 17.6%. This head was possible to form by spinning on standard forms using standard flanging equipment. Had it been decided that a conventionally shaped dome head was required, the preparation of special forms for spinning would have added from $6-$8,000 to the price of the vessel. Also, the delivery date would have been extended. The bottom cone is made with a total angle of 51° instead of the angle of 71° used in other Port Angeles digesters. This narrower cone was adopted with the thought that cleaner blowing might be achieved by its use.

Maintenance

The only emergency maintenance was just 6 days after the vessel was placed in service. A defect in the stainless steel weld at the junction between the bottom of the cone and the bottom nozzle neck allowed the cooking acid to pass through the lining and to cut a hole through the mild steel shell at that point. The failure occurred shortly after the digester had come to pressure at the beginning of a cook. It was necessary to drain the acid, weld a plate over the hole on the outside of the shell and repump and cook off the digester with 140 psi steam flowing into the digester through a nozzle welded to the patch. The steel shell was repaired by welding and the flaw in the lining weld was also repaired by welding. Since that time we have had no leaks through the shell of the digester.

Minor defects in the stainless steel lining have shown up from time to time on routine lining inspections. We have found that repairs made by arc welding are permanent.

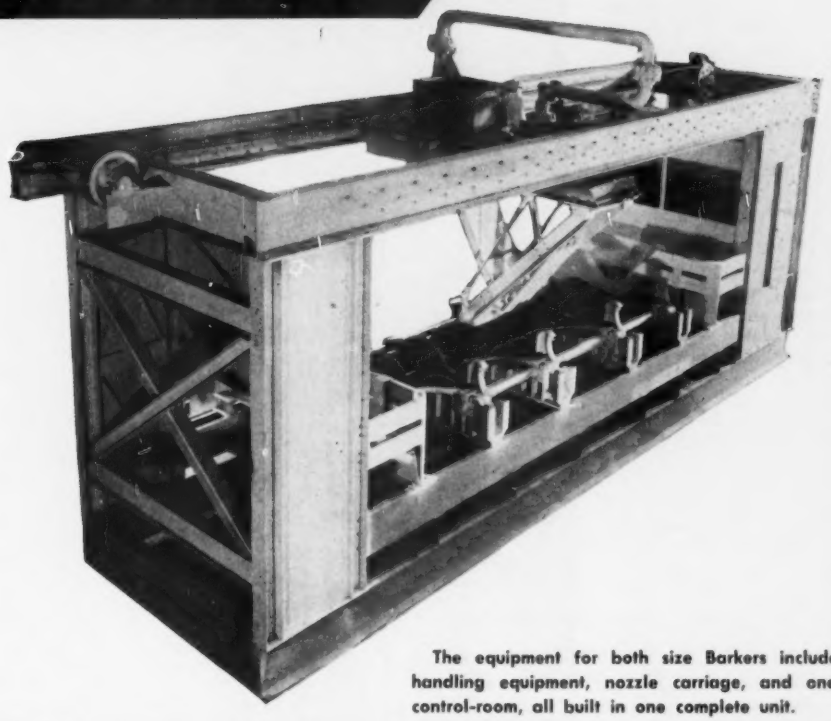
After about one year a type of defect known as a cast spot, a flaky condition of the metal at a spot weld, began to show up. 20 or 30 of these cast spots have been repaired. Here, also, the repair appears to be permanent.

After about two years, corrosion began to show along some of the larger welds in the cone and some repair work has been done here. More will be necessary in the future. The repair in this case consists of depositing a layer of weld metal over the corroded area. The lining of the bottom neck began to show rapid pitting and general corrosion after 1½ years. This was probably caused by the effect of the severe mechanical treatment this section had during fabrication. This small area was lined with a second layer, 3/16" thick, of Type 316 stainless steel. No further trouble is expected at this point.

The bottom fitting has been dropped on several occasions for inspection of the bottom flange face. Some pitting has occurred here and it has been necessary on two occasions to build up small pitted areas on this face with weld deposit. The face was then re-machined to provide a smooth gasket surface. Some further trouble may be experienced here since there is a small area where liquor can penetrate under the edge of the gasket and become stagnant.

Shortly after the digester was placed in service it was noticed that a black scale was forming on the stainless steel lining of the top head. Pitting and other corrosion was occurring under this scale. A routine of removing this scale at frequent intervals was adopted, but in spite of this the corrosion continued. Test strips of a number of alloys were placed in the head and an alloy was found to which scale would not adhere and which would not pit or corrode. The analysis of this alloy which is known as Hastelloy "F" is: 21.5% Cr; 45.0% Ni; 6.0% Mo; 1.5% Mn; 0.06% C; 0.40% Si; 1.1% Cb: 1.0% Ta.

The Bellingham Barker-
NEATLY PACKAGED!



The Large-size Bellingham-type Barker, as originally designed and "pioneered" by the Puget Sound Pulp & Timber Company (Bellingham, Wash.) and exclusively built by SUMNER for the hydraulic barking of round logs up to 44' lengths and 96" maximum diameters, has proven its merit by each additional installation in Washington, Oregon, California, British Columbia, and Tasmania (Australia) pulp mills.

To adapt the Bellingham-type Barker principles to meet the needs of pulp mills cutting logs with smaller average maximum diameters and in shorter lengths, SUMNER engineers devised the Medium-size and "Package-Unit" Bellingham-type Barkers, the Medium-size to handle round logs in maximum 24' lengths up to 60" diameters and the "Package-unit" for up to 10' lengths with 36" diameters.

The Medium-size and "Package-Unit," in some cases, can be engineered for adaptation to existing pulp mill Wood Rooms.

The equipment for both size Barkers include log handling equipment, nozzle carriage, and one-man control-room, all built in one complete unit.

The above picture illustrates the Medium-size Bellingham-type Barker now in operation at Columbia River Paper Mills, Vancouver, Washington. Another Medium-size Barker is to be installed at Oregon Pulp and Paper Company, Salem, Oregon, this Fall. "Package-type" units are now in operation at the Publishers' Paper Company, Oregon City, Oregon, and at Rayonier, Inc., Hoquiam, Washington.

If you are considering round log Hydraulic Barkers, with the resultant savings in timber-ability to produce cleaner chips—and drastically lowering your labor costs, it will pay you to investigate the most popular Barker on the Pacific Coast—the Bellingham-type Barker.

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IRON WORKS
Since 1892
EVERETT, WASHINGTON

News and Notes from EQUIPMENT AND SUPPLY COMPANIES

ALLIS-CHALMERS' president, W. A. Roberts, announces election of J. L. Singleton, vice president in charge of the general machinery division, and R. S. Stevenson, vice president in charge of the tractor division to the board of the Allis-Chalmers Mfg. Co. They succeeded the late Walter Geist and W. C. Johnson. (the later died July 26—was exec. v. p.)

Mr. Singleton was born in Chattanooga, graduated from Alabama Polytechnic Institute, entered the Allis-Chalmers graduate training course in 1926. Mr. Stevenson was born in Seattle, was graduated from Washington State College, joined Allis-Chalmers as salesman in Kansas City branch in 1933.

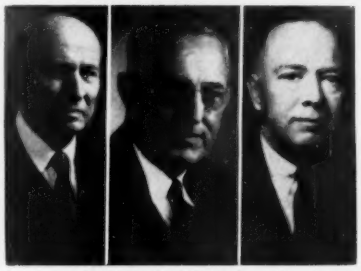
CRANE CO.'S SALES ENGINEER and specialist in pulp and paper mill uses for stainless and alloy valves, fittings, etc., JOHN A. MINSER, recently visited the Pacific Coast and toured a number of the large Northwest mills in company with CHESTER LATHROP, Seattle representative for Crane. Mr. Minser is sales engineer in the alloy sales section headed by J. E. Bradbury, Crane Co., 836 So. Michigan Av., Chicago 5, Ill.

WHITING CORPORATION (CANADA) LTD., TORONTO, has acquired the business of Niagara Screens and Machines, Ltd., and will operate it as a separate division.

INFILCO INC., having moved executive, engineering and sales offices to Tucson, Ariz., last September, from Chicago, has started building a new headquarters in Tucson. Infilco, leading makers of water conditioning and waste and sewage treatment equipment, started construction on a building to occupy 7½ acres, comprise 36 000 square feet floor space, house over 200 employes and cost more than $400,000.

SAMUEL M. LANGSTON CO., makers of paperworking machinery, have published a beautifully-done 50th Anniversary book, entitled "Leadership by Design," which is not only an attractive story about that company from inception to date, but is—in reality—a story of the growth of the container industry itself. We were very pleased to receive a copy of the book from President Bryant W. Langston, president, and congratulate him and also the author, Robert W. D'Ambry.

HERCULES POWDER CO.'S Paper Makers Chemical Department announces a fortified rosin size, formerly known as Dresinate 209, is now identified as Pexol. A companion product, a size additive in dry form, has had its name changed from Dresinate 211 to Size-Aid. Both Pexol and Size-Aid are readily available. Pexol is described as a highly efficient, particularly in difficult sizing problems, cheaper to use than conventional sizes. Size-Aid is a dry, concentrated size additive to increase efficiency of rosin size.



TEXAS GULF SULPHUR COMPANY, world's largest sulphur producer, announces WALTER H. ALDRIDGE (left), has been elected Chairman of the Board, FRED M. NELSON (center), President, and THOMAS S. LAMONT (right), Chairman of a newly-formed Executive Committee. Others on committee are Erle V. Daveler and Lowell C. Wadmond. Mr. Aldridge had been president of Texas Gulf since it began operations 32 years ago. His ingenuity and vision guided the company to its dominant position in the industry today. He had long been identified with the minerals development of U.S. and Canada. Mr. Nelson has been in charge of many Texas Gulf field operations since he joined the company in 1927; is graduate of Colorado School of Mines; from 1945 to 1950 was Executive Assistant, concerned chiefly with sour gas investigations. Mr. Lamont is Vice President and Director of J. P. Morgan & Co.

WORTHINGTON PUMP & MACHINERY announces promotions (l to r): A. H. BORCHARDT, elected Vice President in charge of all pump sales (Columbia graduate, was Asst. V.P. in charge of Centrifugal Pump Sales); V. de P. GERBEREUX, to Manager of Centrifugal Pump Sales (Cornell graduate); W. CLIFFORD MUMFORD, to Manager of Vertical Turbine Pump Sales (from Holyoke, Mass., Works, was Acting Manager).

INTERNATIONAL NICKEL COMPANY announces the development of an alloy for use under conditions of high temperature and corrosion. The new alloy, trade-named "Incoloy," contains about 35% nickel and 20% chromium, with the balance iron. It is produced in most standard rolling mill forms, including sheet, strip, rod, wire and tubing. This alloy is designed for many purposes now served by some of the company's older alloys, which run up to more than 70% nickel.

JOHNSON CORP. of Three Rivers, Mich., has announced that the self-supporting Type S Johnson Joints are now available in heavy duty construction suitable for operating pressures up to 250 lbs. The Type S is used widely in paper-making, textile and rubber mills, and throughout industry wherever heating or cooling agents must be admitted to rotating rolls. The Type S is a specialized variation of the regular Johnson Rotary Pressure Joints, which have been adopted as standard equipment by many machinery manufacturers.

THE CAMACHINE TRIPLEX, designed by Cameron Machine Co., Brooklyn, N. Y., is a new slitting and rewinding machine used for converting acetate film. Shown for the first time at the National Packaging Exposition in Atlantic City, the machine is one of several built for the Celanese Corp. of America, designed for speeds up to 800 fpm. and has a rewind capacity of 15" diameter.

THE BLACK-CLAWSON CO. announces appointment of Michael B. Gormley as consultant to the engineering departments of Black-Clawson and Shartle Brothers Machine Co.

ROOTS-CONNERSVILLE BLOWER CO., Connersville, Ind., announces Robert H. Owens has been elected its president and general manager, succeeding John Avery. Mr. Owens was actively connected with the development of the centrifugal line of blowers built by R-C. Ralph R. Newquist, who became vice president in charge of sales for Roots-Connersville in 1946, has been elected executive vice president.

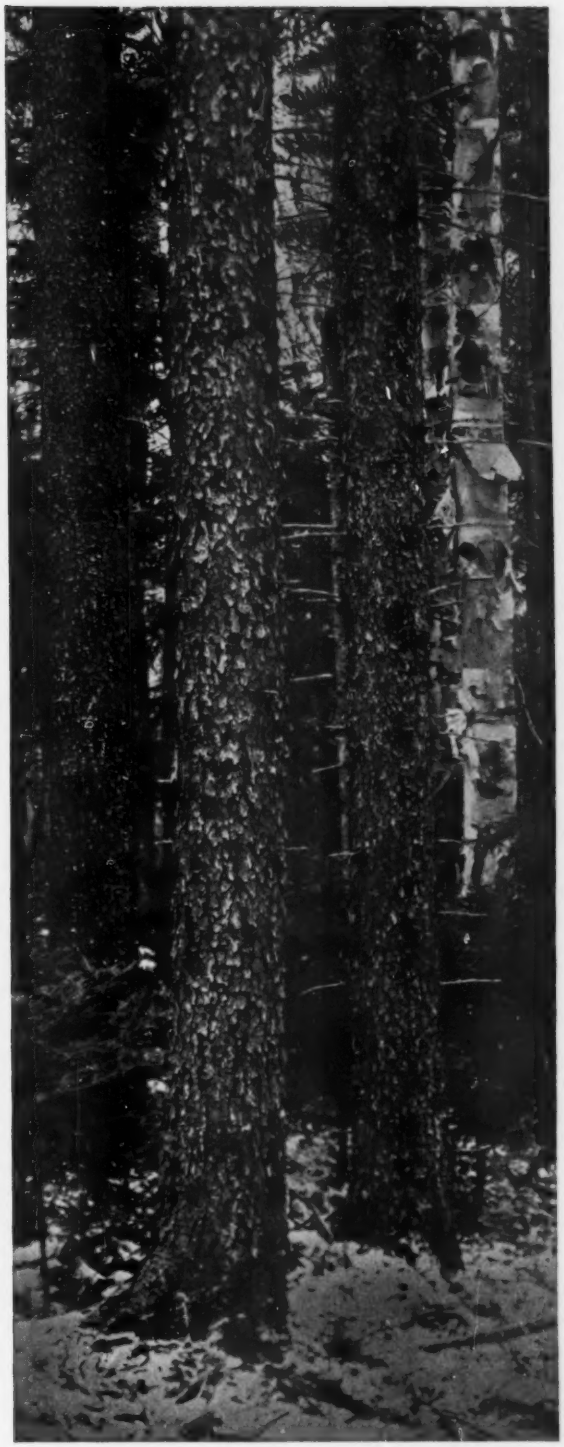
FAIRBANKS, MORSE & CO., will have a new plant in Kansas City, Mo. Stone & Webster Engineering Corp. is building it. Occupying approximately 500,000 square feet of floor space, it will include scale factory, a foundry, and is to be used to make engines and pumps.

NATIONAL ANILINE announces that H. J. Daigneault and M. A. Conner have been appointed vice presidents, National Aniline Division, Allied Chemical & Dye Corp. with headquarters at 40 Rector St., New York. Both have been with National Aniline for over 30 years.

CHROMIUM CORP. OF AMERICA'S 25th anniversary of its foundings was observed on July 19, 1951 at its Waterbury, Conn., Chicago and Cleveland plants and New York office.

During this period it has enjoyed the cooperation and recognition of the pulp and paper industry as the pioneer industrial chromium plating firm, having participated in the introduction and advancement of plating as an industrial tool.

WARREN STEAM PUMP CO., INC., Warren, Mass., announce the availablity of a new eight-page bulletin, WQ-50, covering Warren-Quimby Rotex Pumps. The bulletin illustrates and describes this improved rotary type of pump.



Confidence grows on Trees!

Brown Company's extensive timber holdings and the modern forestry methods employed give assurance—growing assurance—that manufacturers will always be offered a dependable supply of the finest pulp, either from hardwood or softwood. For nearly a century, Brown Company's vast resources have provided security for its customers.

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NIBROC TOWELS • NIBROC KOWTOWLS • BERMICO SEWER
PIPE, CONDUIT & CORES • ONCO INSOLES • CHEMICALS

Personals

J. E. "JACK" MAURER, formerly vice president, Fernstrom Paper Mills, is established at Pomona, California, in the paper converting business. Originally begun as Maurer & Halstead, the firm name is now Tidi Products, Inc., Paul Halstead having withdrawn. Products are paper surgical specialties, shelf and drawer paper, resale kraft wrapping, tissue, etc.

JOHN V. ROSLUND, Pacific Coast representative of several suppliers and machinery manufacturers, left his Portland, Ore., home with Mrs. Roslund recently for a six weeks' trip in the East. He planned to visit his principals, Downingtown Mfg. Co., in Downingtown, Pa.; Asten-Hill Co., Philadelphia and H. Waterbury & Sons, Oriskaney, N.Y.

HARRY S. REGNART, Northern California representative of Oregon Pulp and Paper and Columbia River Paper, was recalled to active duty with the U. S. Army on July 26. Taking his place, with headquarters at the company office in San Francisco, will be *VINCENT M. OTTO*. Mr. Otto, for the past several years, has been located at the Portland office.

HERMAN R. AMBERG became West Coast resident engineer for the National Council for Stream Improvement in mid July, replacing *ROBERT P. LOGAN*, who has been affiliated with The Dorr Co., to carry on research work at Stamford, Conn. Mr. Amberg, a graduate of Syracuse University in chemical engineering, worked for 2½ years at Johns-Manville Corp. research center, Findern, N.J. He received a Ph.D. and M.S. from Rutgers. As a consultant for mills, he will make stream analysis and fiber loss surveys. He can be reached at his home, 4444 N.E. Hoyt St., Portland; phone VErmont 0261.

DR. MARK PLUNGUIAN, head of pulping section, central research department, Celanese Corp. of America, Summit, N.J., and *GORDON ROOT*, director of public relations, Columbia Cellulose Co., Ltd., Division of Celanese, Prince Rupert, B.C., toured mills of the Pacific Northwest in July.

O. K. CHAPMAN, assistant superintendent, Weyerhaeuser Timber Co., pulp division, Everett, Wash., has been transferred to the Organization's Longview operations as kraft mill superintendent. *JOSEPH C. BROWN*, shift superintendent at Longview, has been named technical director of Weyerhaeuser Timber Co., Pulp Division, Springfield, Ore.

KURT WALSETH, graduate of Institute of Paper Chemistry and recently of Union Bag & Paper Corp., Savannah, Ga., affiliated with Weyerhaeuser Timber Co., pulp division, research department at Longview, Wash., in June. *JOHN GRILL*, of purchasing department, has been promoted to assistant supervisor of mill purchases at Crown Zellerbach Corp., Camas, Wash., the position held by *JOE HOXIE* until his sudden death by heart attack in late July.

ART F. BENSON, veteran master mechanic at Fibreboard's Port Angeles mill, has retired after 33 years in the industry. He attended the U. of Nevada, was machinist with Southern Pacific, worked with machinery builders and joined Paraffine Cos. at Emeryville, Calif., in 1918, and was constructing superintendent of their boxboard plant at Antioch, now Fibreboard's. He moved to Port Angeles in 1923 as master mechanic for the Paraffine boxboard plant there, now Fibreboard. A dinner honored Mr. Benson July 31, where associates gave him golf clubs and a desk pen set.

RAY SCHADT, resident manager, Crown Zellerbach, Port Angeles, led his mill golf team to glorious defeat at the hands of Fibreboard's Port Angeles team, led by Resident Manager *VERN BASOM*, and the C-Z players bought the steaks. *NELSON HARTNAGEL*, assistant manager, was reported to have been a "stellar" performer for Fibreboard.

ROBERT W. STEVENS, Los Angeles, paperboard mill consultant, returned in July from a trip to Sweden, where he was called to advise with Fiskeby Fabriks Aktiebolag, Norrkoping, located about 80 miles south of Stockholm, on probability of building a new paperboard mill there. Bob plans another flight overseas in the near future.

C. E. SHAWHAN, until recently superintendent of Angelus Paper Box Co., Los Angeles, is now with Container Corp. of America, California division, in connection with the boxboard paper mill that company is installing now.

B. E. CALHOON, Marathon Corp., has been named general chairman of the annual Hi-Jinks, Paper Mill Men's Club, Los Angeles, to be held at Oakmont Country Club, Sept. 28. Jack Perrin, Towlsaver, Inc., was named assistant general chairman.

LEO A. "BILL" GARDINER, for years manager, West Coast division, Nekoosa Edwards Paper Co., Los Angeles, has been transferred to the Chicago office and will take over a sales territory out of that city.

ROLAND WOLF, Graham Paper Company, Los Angeles, has left that company to become associated with the Sherman Paper Products Corp. of California. *FRANK R. PHILBROOK*, past president PMMC, is head of the Southern California office of Graham Paper.

KEN W. HUTCHINS, staff assistant to Assistant Resident Manager *G. W. CHARTERS*, Crown Zellerbach Corp., Camas, Wash., left the C-Z organization Aug. 1 to become manager of industrial engineering and executive staff member of Rockwell Manufacturing Co., Pittsburgh, Pa.

A. G. NATWICK, assistant resident manager of Crown Zellerbach, Camas, attended the funeral of his father, *J. W. NATWICK*, at Wisconsin Rapids, Wis., July 19. Many years ago J. W. Natwick was head sawyer at John Edwards Manufacturing Co., predecessor of Nekoosa-Edwards Paper Co.

JACK V. SAVAGE, sulfite mill superintendent at Camas, vacationed along the Pacific beaches in July, with wife Ethel and son Kirk. Star feature was a trip up Oregon's turbulent Rogue River by mail boat from Gold Beach.

WILFRED C. GIGLER, superintendent of napkin and lunchroll department, Crown Zellerbach, Camas, was promoted to converting superintendent, Aug. 1, replacing *FRANK F. SULLIVAN*, who has retired after nearly 40 years with the organization. *CLARENCE E. HARRIS*, formerly shift foreman, became superintendent of napkin and wax lunchroll department.

JACK MILLER, formerly of chemical engineering section, C-Z Central Research Department, affiliated with Union Oil Co. of Southern California in July.

DR. W. W. MOYER, director of Central Research Dept., Crown Zellerbach, will deliver a paper, "Industrial Cellulose Research," in symposium on industrial utilization of carbohydrates, division of sugar chemistry, at American Chemical Society's New York City diamond jubilee meeting, Sept. 3-7.

H. E. "EDDIE" BURNETT, of personnel department, C-Z, Camas, was critically injured in late July when struck by an automobile.

RUSSELL A. GOODWILLIE, new Pacific Coast representative for Beloit Iron Works, and brother of J. E. Goodwillie, vice president of that company, now has a downtown office, 1201 Terminal Sales Building, in Portland, Ore., Phone Atwater 3112. In announcing his appointment a month ago, we reported he was working out of his home at 7156 S.E. Reed College Place. Russ, Detroit-born, has been 17 years with Beloit.

ARTHUR W. GREELEY has been appointed assistant director of Pacific Northwest Forest & Range Experiment Station, Portland, Ore., according to announcement made in late July by Station Director Robert W. Cowlin. In this position Mr. Greeley, supervisor of Lassen National Forest in California since 1947, will aid in coordination of research programs within the station and with other federal and state research agencies.

Link-Belt Engineer

THOMAS CORNILS, who has been appointed Chief Engineer for Pacific Northwestern Division, Link-Belt Co., with headquarters at Seattle, Wash., plant. He graduated from U. of Washington in mech. eng., 1928.

CANADIAN NOTES

S. E. WILLIAMS, formerly resident manager of St. Lawrence Paper Mills at Three Rivers, Que., has been appointed general manager of St. Lawrence Paper Mills Co. and its subsidiary Lake St. John Power & Paper Co., replacing *A. GEORGE JACQUES*, who has resigned due to ill health.

H. R. MacMILLAN, chairman, H. R. MacMillan Export Co., and *PRENTICE BLOEDEL*, president of Bloedel, Stewart & Welch, accompanied by *JAMES PETRIE*, manager of the pulp division of the Bloedel organization, recently made an air tour through the British Columbia interior.

DR. BJORN ANDERSEN, newly appointed vice president in charge of research, Celanese Corp. of America, Summit, N.J., paid his first visit to the company's subsidiary, Columbia Cellulose Co., at Watson Island, B.C., in July.

Accompanying a group of Boston bankers to the Pacific Coast recently was *EMERY CLEAVES*, vice president in charge of public relations, Celanese Corp. of America.

WALTER W. HOLLAND, formerly general superintendent of Quebec North Shore Paper Co., Baie Comeau, Que., and currently chairman of the Technical Section, Canadian Pulp and Paper Association, has joined the Oxford Paper Co. as manager of production at Rumford. He was with Price Bros. & Co. and Ontario Paper Co. before going to Baie Comeau.

E. LONNQUIST has succeeded *JACK WEST* as manager of the Canadian International Paper Co.'s Three Rivers, Que., mill. Mr. West was with the mill for the past 18 years and on his retirement was honored at a banquet in Montreal. He continues in a consulting capacity with C.I.P.

KAY CRABTREE, member of a family that has long been associated with the production of pulp and paper in Canada and the United States, has retired as mill manager of the Crabtree Mills Division, Howard Smith Paper Mills, where he has spent the past 45 years.

CHARLES DUNHAM, for 18 years with Bloedel, Stewart & Welch, British Columbia logging, sawmill and pulp mill operators, has been appointed manager of the company's logging and timber divisions.

GEORGE SCHNEIDER, senior vice president of Celanese Corp. of America, and *D. G. STENSTROM*, West Coast representative, Columbia Cellulose Co., spent a few days late in July fishing at Babine Lake, Central British Columbia.

DAVID H. ROSS has been elected president and general manager of Gair Co. Canada, Ltd., Toronto, according to announcement by George E. Dyke, president of Robert Gair Co., Inc., New York, of which the Canadian company is a wholly-owned subsidiary. Mr. Ross has been in the boxboard business in Canada since 1919 and has been a vice president and director of Gair Canada. Other Canadian elections included W. George Cowan as vice president; Alpin L. Mitchell, vice president in charge of sales; and J. Stanley Babbitt, vice president in charge of Montreal operations.

T. A. McDONALD, executive vice president, Crown Zellerbach Corp., San Francisco, and *PAUL E. COOPER*, president of Pacific Mills, Ltd., were speakers at the presentation of service awards at Ocean Falls. *J. A. YOUNG*, first vice president, presented a plaque to *WALTER MARSHALL*, vice president of the 25 Year Club. Recipient of a 35-year pin was *WILLIAM ANDERSON*.

TODAY, conservation of valuable materials from flue gases of black-liquor-fired recovery boilers *is more important* to the kraft paper industry than ever before. That's why Koppers has developed a special *horizontal-flow* electrostatic precipitator for this service.

Here's why you get more profitable recovery with Koppers-Elex electrostatic precipitators!

HERE'S THE RECORD*

Cleaning flue gases on a 250-ton recovery boiler, a Koppers-Elex precipitator bettered the *guaranteed recovery efficiency* of 92.5% by an *extra 2.5%*. This highly satisfactory performance was obtained even though the unit was operating under a *15% overload* . . . and was verified by tests made by the customer.

GUARANTEED recovery at any efficiency you specify! That's one big reason why more and more kraft mill operators specify Koppers-Elex electrostatic precipitators for profitable recovery of valuable sodium sulfate and sodium carbonate from black liquor processes.

Another big reason is *minimum outage time!* Expensive by-pass systems with loss of materials during inspection and maintenance are *eliminated* by Koppers double chamber design. Maximum recovery is assured because successive collection zones are separately energized and continuous dust removal is provided by a drag scraper which operates on a dry, easy-to-reach *flat* bottom. This is an important feature where chemicals are re-used!

Hundreds of Elex precipitators are in use today all over the world. *Koppers-Elex* electrostatic precipitators are designed, engineered, fabricated and erected *under one contract* by the Koppers Company . . . and each installation comes complete with "packaged" mechanical or vacuum tube power packs. If you have a gas-cleaning problem, write today to: Koppers Company, Inc., Precipitator Dept., 249 Scott St., Baltimore 3, Maryland.

***Guaranteed:** Koppers-Elex precipitators are guaranteed to equal or better (under tests made by your own personnel) any efficiency or residual content you specify.

KOPPERS

Koppers-Elex ELECTROSTATIC PRECIPITATORS

All across the North American continent, north to south and east to west, the industry is improving woodlands technics and introducing large scale conservation, reforestation and mechanization.

ORGANIZATION OF EDUCATION-INDUSTRY PROJECT TO INVESTIGATE CHEMICAL DEBARKING of living trees was accomplished by these representatives of State University of New York's College of Forestry at Syracuse, and nine pulp and paper companies and a chemical company. (L. to r.), front row: Y. E. Lebedeff, American Smelting & Refining Co.; George Snowden, Mead Corp.; W. S. Bromley, American Pulpwood Assn., Project Secretary; Dr. Hardy L. Shirley, Assistant Dean at College of Forestry; H. E. Brinckerhoff, American Pulpwood Assn.; M. H. Collet, West Virginia Pulp & Paper Co., Industry Committee Chairman; Frank Lowthorp, Wise, counsel; Dr. Edwin C. Jahn, College Research Director; D. W. Sowers, West Va. P&P; John Madden, Hollingsworth & Whitney Co. Middle row: Karl Swenning, Hollingsworth & Whitney; William MacAdam, Champion-International Co.; M. L. Hearn, Brown Co.; Paul Koenig, Glatfelter Pulp Wood Co.; E. L. Giddings, Penobscot Chemical Fibre Co.; P. W. Churchill, Brown Co.; L. J. Freedman, Penobscot Chem Fibre; L. J. Kugelman, G. A. Pesez, International Paper Co. Rear row: P. T. Lannan, West Va. P&P; W. E. Eggleston, Eastern Corp.; R. R. Drummond and E. L. Lamb, Oxford Paper Co.

Chemical Debarking Project Established at Syracuse

Nine pulp and paper companies and a chemical company have joined forces with the College of Forestry, State University of New York, Syracuse, N. Y., for cooperative research into the chemical debarking of living trees. The object of the research is to develop simple, efficient and controllable techniques for loosening bark of living trees.

According to Dr. Edwin C. Jahn, director of research at Syracuse, the project is expected to run for two years, and $50,000 has been made available by industry to carry on the work for the first year. The research team, which has already been assembled, consists of Dr. Hugh Wilcox, plant physiologist and for the last five years a wood technologist at the Oregon Forest Products Laboratory; Dr. Felix Czabator, forest botanist and pathologist with 11 years of forestry and logging experience; Dr. Robert F. Smith, bio-chemist from the University of Minnesota; and Douglas C. McIntosh, consulting forester on loan by the Canadian Forest Products Laboratory.

Sponsoring companies supporting the research, which is the first grant to the new Research Foundation of State University of New York, are: International Paper Co.; Penobscot Chemical Fibre Co.; St. Croix Paper Co.; American Smelting & Refining Co.; P. H. Glatfelter Co.; Brown Co.; Hollingsworth & Whitney Co.; Oxford Paper Co.; Eastern Corp.; and West Virginia Pulp and Paper Co. Cooperating companies are the Armstrong Forest Co. and the Marathon Corp.

The experiments, which are to be made in the Huntington Wildlife Experiment Forest in the central Adirondacks, will take into account management and logging problems, retention of chemical in the wood, and the effect on pulping and quality of the finished paper.

Pulpwood Booklet "To People of Canada"

Canadian International Paper Co. and New Brunswick International Paper Co. have issued a handsomely illustrated booklet addressed to "the people of Canada," describing the management of eastern Canada forest lands leased from the government.

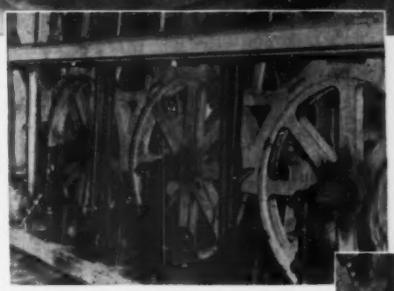
The affiliated companies report how, under the provision of the provincial governments, they manager 13,000,000 acres of forest in Quebec and New Brunswick as a vast tree farm.

Entitled "These Are Your Forests," the report consists of a 28-page photographic essay on the things seen in the course of a 1,500-mile trip taken through the forest by car, boat and plane, by a 15-year-old school boy, accompanied by Eugene Lessard, chief forester for the managed forest, and "Manny" Wilson, in charge of forest education.

COMPAGNIA INDUSTRIAL DE ATENQUIQUE, government-owned kraft pulp and paper mill at Atinquique, Mexico, is one of the few mills in the world making pulp from virgin wood. UNION FORESTAL DE JALISCO Y COLIMA, S.A., is the union-government company created to supply it with pulpwood and the General Superintendent in charge of wood production is ANTONIO SANCHEZ ALDANO, 31 (shown above alongside a huge pine pulpwood log). He graduated from Santa Clara University in California. He reports his company has purchased a new fleet of 25-L192 International trucks; Caterpillar D7 and D8 tractor yarders, donkeys, etc. When visited a few years ago, this company had about 50 Fords and Chevs, for the steep grades, and 12 Macks, Whites and Kenworth Diesels with trailers.

For ACCURATE *Dryer Gears . . .*
Specify Pacific-Western HOBBED *Gears*

A Pacific-Western gear expert is shown operating a precision hobbing machine which is generating the teeth of a dryer gear after it has been filled with laminated phenolic plastic segments bolted on to the gear center.



In the above photograph of a paper drying machine Pacific-Western dryer gears on the bottom mesh with the top row steel gears.

Pacific-Western dryer gears, driven by a precision-hobbed, hardened steel pinion, serve as initial drive units for two gear trains on paper drying machine.

4977

EXPERIENCE has proven that high speed dryer gears must be of extreme accuracy to stand up under long periods of continuous paper drying machine operation without frequent breakdown and replacement. To insure such accuracy every Pacific-Western dryer gear filled with laminated phenolic plastic is hobbed—the best method for producing gears of this size and type.

Pioneered by Pacific-Western 27 years ago, these hobbed gears are more accurate in tooth spacing and tooth profile than gears made by indexing, or "single-cut", methods. A hobbed finish is superior to a finish resulting from a "single-cut" operation which leaves radial marks across the teeth.

With increased speed now being required of nearly all paper drying machines it is of interest to mill superintendents to know that Pacific-Western dryer gears are operating in many mills at a pitch line velocity of over 1600 feet per minute. Substantial savings in downtime as well as reductions in noise and vibration have been reported in numerous installations in U. S. and Canadian mills.

To provide fast customer service patterns are available at Pacific-Western plants for most standard paper machines. Call the plant or office nearest you for prompt quotation on new or replacement dryer gears for your mill.

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USE OF POWER SAWS IN CANADA

T. M. POND (left), of Fraser Companies, who conducted Canadian surveys and snapshots from Canada woods of some power saws in use which he sent us: Top left, a PM READHEAD saw cutting 2 logs at once into 4-ft. bolts; to right, McCULLOCH one-man chain saw felling tree. Lower left, MALL TOOL Hornet DJ Model used to buck tree with bark into 4-ft. bolts (man in background is peeling and piling blocks); lower right, POWER MACHINERY CO. PM Woodboss bucking peeled logs into 4-ft. lengths.

Use of power saws in Eastern Canada has resulted in an overall increase of 20% in production, according to a survey conducted by T. M. Pond, woodlands division, Fraser Companies Ltd., Edmundston, N. B., and chairman of the cutting tools committee, woodlands section, Canadian Pulp and Paper Association.

A survey by the committee during the 1949-50 season obtained the general reactions of workers to the power saw as a replacement to the bucksaw. The data covered operations affecting 6,750 cords of 4-ft. wood, and indicated approximately 90% of the workers found power saws an improvement over the bucksaw in nearly every important respect.

Power saws according to Mr. Pond, showed an increase of 20% in production for all cutters involved over their own record with bucksaws. This survey did not yield reliable records as to comparative costs, so a series of carefully conducted power saw tests was initiated and standard records of operations were kept. Five of the projects carried out by various companies filed reports, and a final summary will be submitted to the industry.

Reports to date cover operations for 21,220 cords by several methods of operating, over a period from Aug. 8, 1950, to Feb. 19, 1951. Stands varied from 7 to 35 cords per acre and wood ranged in size from 85 to 130 bolts per cord. Eighty-one one-man gasoline powered chain saws of 8 different makes were used, with both chipper and scratch tooth chains. About 80% of these saws were owned by the workers and 20% were company owned.

A summary of records for three experimental projects for a total of 6,120 cords of wood resulted in the following average production per man of 10 hours working time:

Stump cutting on 50-foot strips and piling—one and two-man crews—2.53 cords per man day

Yarding (tree lengths) with horse, two-three-four-man crews—2.63 cords per man day.

Slashing and piling only—peeled wood previously yarded—6.32 cords per man day.

Slashing and piling only—rough wood previously yarded—7.50 cords per man day.

"Detailed records of operating expense were kept on 6,120 cords, showing costs varying from 30 to 51 cents, with an average of 38 cents per cord," states Mr. Pond. "This includes fuel, lubricants, parts and labor maintenance. The saws used were practically all new and cut an average of 200 cords each during tests.

"Estimated rate of depreciation based on an assumed life expectancy of 1,500 cords with an average saw purchase price of $400 indicates depreciation at a rate of 27 cents per cord. The total power saw cost then would be 65 cents per cord, compared with a figure of 5 cents per cord for bucksaw blades and frames, or 60 cents per cord for power saw cost over bucksaw cost for the worker.

"Comparison of earning possibilities of power saws over bucksaws can be made. The estimated average daily production for cutters using bucksaws is 1.70 cords per normal working day, and using a piece rate of $5.00 per cord less 5 cents per cord for cost of bucksaw blades and frames, average daily gross earnings would be $8.41.

"The 1949-50 survey indicated an increase in production per man day by the use of power saws of 20%. The 1950-51 tests indicate a greater increase but for the time being we are using the conservative figure of 20%. The average production of cutters using power saws would then be 2.04 cords per normal working day. Taken at a similar piece rate of $5.00 per cord less 65 cents for power saw operating costs, daily gross earnings would be $8.87 or 46 cents per day greater.

"This 20% increase was obtained with workers of whom 64% were operating power saws for their first season, and only 8% had more than two years experience. On one company's operation where power saws have been used three years, average increase in production for more experienced operators with power saws is 30% over bucksaws, which makes possible an additional earning of $1.20 per day.

"Most successful results have been obtained where power saws are owned by the workers. One company had at one time during the past cutting season as many as 80 power saws all privately owned on an operation for 75,000 cords.

"To introduce power saws on an operation involves considerable preparation and assistance from the company concerned, and even with this, optimum results cannot be expected until workers have gained a reasonable amount of experience."

Chipper in Sawmill

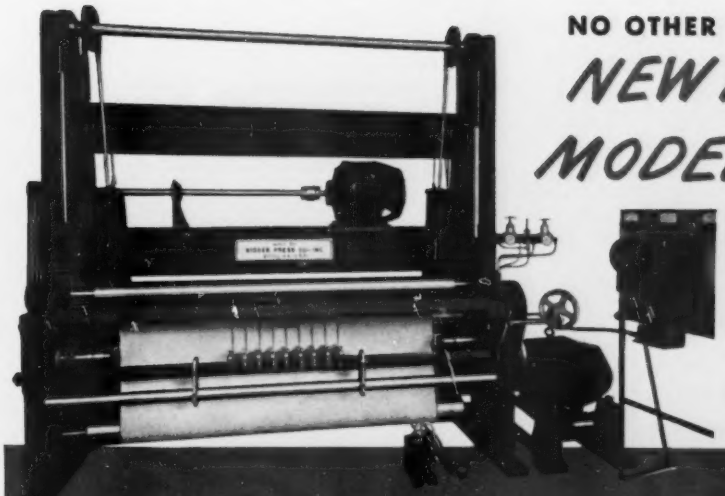
Another source of chips for the new H. R. MacMillan Export Co. Pulp Division at Harmac, Vancouver Island, materialized this year when the Sumner 8-knife 66-inch chipper, driven by a 200 h.p. engine, went into production at B.C. Forest Products' sawmill at Youbou, on Cowichan Lake. Previously, most chips for Harmac were produced by the two MacMillan sawmills and Harmac's own wood room. A fleet of Dodge trucks will deliver ten units per trip over the 60-mile highway between Youbou and the mill.

American Foresters to Meet in Biloxi

"Southern Forests—Past, Present, and Future," is the theme of the 51st annual meeting of the Society of American Foresters, to be held in Biloxi, Miss., Dec. 12-15, 1951, headquarters at the Buena Vista Hotel. President Charles F. Evans of Atlanta, Ga., has announced all foresters and friends of forestry everywhere, whether members of the society or not, are welcome. Technical sessions will be devoted to forest management, silviculture, forest products, private forestry, forest economics, watershed management, forest recreation, forest-wildlife management, range management, public relations and education.

Charles A. Connaughton, of Atlanta, Ga., general chairman of the meeting, anticipates an attendance of 1,000.

An advertisement in PULP & PAPER is ALWAYS WORKING—in every state and every region where pulp and paper is made in North America and in 40 countries around the world!



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NEW KIDDER MODEL G.T.

HAS NO GEARS...

upkeep greatly reduced!

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200-lb. tag stock easily slit!

FOR EASIER, LOWER COST SLITTING, INVEST IN THE GEARLESS KIDDER MODEL G.T.

YOU GET ALL THESE FEATURES:

Replaceable V-belts — no dismantling.

Rotating members (except mill roll shaft) mounted on sealed anti-friction bearings.

Packaged motor drive, including M. G. set. Main motor and mill roll brake on right of machine.

Shear-action cutting. Shaft-mounted, two-edged back cutters, ⅜" wide, driven slightly faster than web. Ball bearing front cutters, rotating by pressure against back cutters, kept sharp by latter's harder metal.

Wound roll weights — either on core or collapsible shaft — in cradle formed by two drums, under pressure from a third above. Two drums main motor driven, top roll driven by constant-controlled auxiliary motor.

Controlled hardness. Varying pressure and speed of top roll assembly heavy enough to wind hardest roll. Pneumatic cylinder provides counterbalance from zero to complete lift.

Web tension provided by water-cooled, rotating-disc brake. A mechanical uniform constant tension device is also available.

Wrinkle-smoothing bow that handles baggy stock. Adjustable to any angle, can press web's center or edges, combining with mill rolls' bias adjustment to keep web straight and taut.

Model G.T. Gearless Slitter comes in 42", 54", 64", 74", 84", 94" width sizes, 1000 to 1800 fpm speeds — Kidder engineers will recommend exact size for correct capacity. Standard Model: 36" rewind roll; Special Model: 40" rewind roll.

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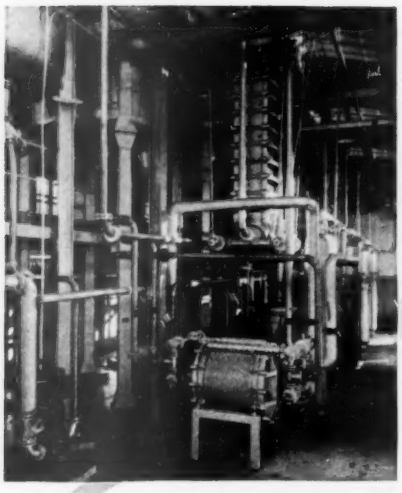
Name ..... Position .....

Company .....

City ..... Zone ..... State .....

Materials to be slit (attach sample) .....

Narrowest cut ..... Finished roll dia. .....



Scandinavian Evaporator installation with Rosenblad* Channel Switching System.

*Patents Applied For

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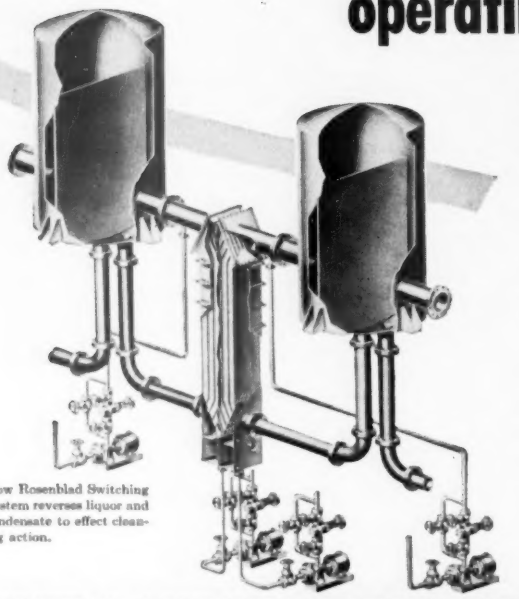
CONKEY FLAT PLATE HEATING SURFACE EVAPORATOR WITH

Rosenblad Switching System operating successfully



How Rosenblad Switching System reverses liquor and condensate to effect cleaning action.

The Rosenblad Switching System for concentrating sulphite pulp mill waste liquors has been proven in commercial operation—in numerous pulp mills in Scandinavia, some of them in operation over a number of years. These proven installations are now being duplicated in this country by General American. In all of these installations, shut down time and scale removal costs have been eliminated by a condensate wash de-scaling operation carried on during full capacity operation of the evaporator. Surfaces subjected to boiling liquor are periodically switched with those in contact with vapor and condensate to clean heating surfaces during normal continuous operation. All parts of equipment are switched, washing away scale with condensate from pipe lines, valves, vessels—in addition to heating surface. ***Write for Bulletin.***

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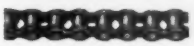


Baldwin-Rex Roller Chain

Rex Chabelco Steel Chain is ideal for mill drive service. Since most mill drives operate under heavy loads at low to moderate speeds, Rex Chabelco delivers more horsepower for each dollar of investment. Here's why:

First, for equivalent load, Rex Chabelco Chains and Sprockets are lower in original cost than other types of driving medium. Often a single strand Chabelco Chain will handle loads that require multiple strands in other types of drives.

Second, Rex Chabelco is lowest in overall operating cost and assures the longest overall drive life. It is a precision-built chain made of high carbon or alloy steel, heat treated for high strength and durability. Clearances are built in between chain parts, permitting exposed operation under severe conditions. Dust and dirt are far less likely to build up between chain parts and cause "freeze-ups." Heavy shock loads are easily accommodated. Maintenance is simpler . . . more economical.

Rex Chabelco Chains come in a wide variety of sizes and strengths. They are frequently used to replace cast chains of equivalent size where greater strength is necessary. They can often operate over the same sprockets as equivalent size cast chain.

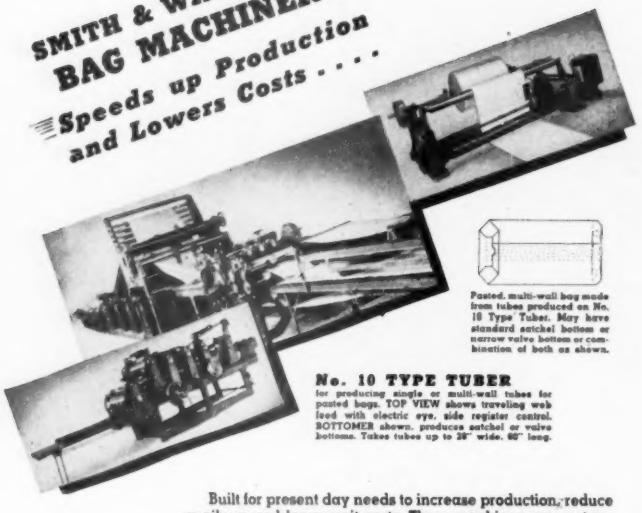
Rex Chabelco Chain Drives are *easy* to select. For information, ask your local Rex Field Sales Engineer, or write to Chain Belt Company, 1691 W. Bruce Street, Milwaukee 4, Wis.

CHAIN BELT REX COMPANY ®

CHAINS AND SPROCKETS

SMITH & WINCHESTER BAG MACHINERY

Speeds up Production and Lowers Costs . . . .

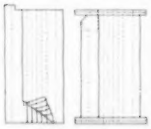


Pasted, multi-wall bag made from tubes produced on No. 10 Type Tuber. May have standard satchel bottom or narrow valve bottom or combination of both as shown.

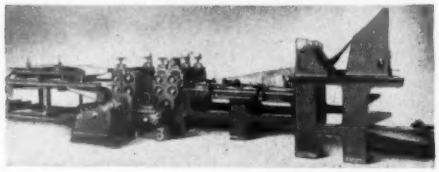
No. 10 TYPE TUBER

for producing single or multi-wall tubes for pasted bags. TOP VIEW shows traveling web feed with electric eye, side register control. BOTTOMER shown, produces satchel or valve bottoms. Takes tubes up to 28" wide, 60" long.

Built for present day needs to increase production, reduce spoilage and lower unit costs. These machines are custom-made to your requirements and will give continuous, trouble-free service. Increase your profits by speeding up production with Smith & Winchester equipment.



Multi-wall, sewed valve type, gusseted tube made on Smith & Winchester Multi-wall Tuber.



S & W MULTI-WALL TUBER

Up to 100,000 valve notch tubes each 8-hour day may be produced on this Multi-wall Tuber for sewed valve bags. One to 6 walls. Machine built in 2 sizes, 20" and 26" face. Up to 6" gussets. Tubes 26" to 50" long. Improved cross pasting units, photo-electric compensating drives and flying splice paper roll stands can be furnished. If you have a bag problem write us.

THE SMITH & WINCHESTER
Manufacturing Company
South Windham, Conn.

SERVING THE PAPER INDUSTRY SINCE 1828

ANSWERS TO OUR PAPER TERMINOLOGY QUIZ

(See Page 39 for the Questions)

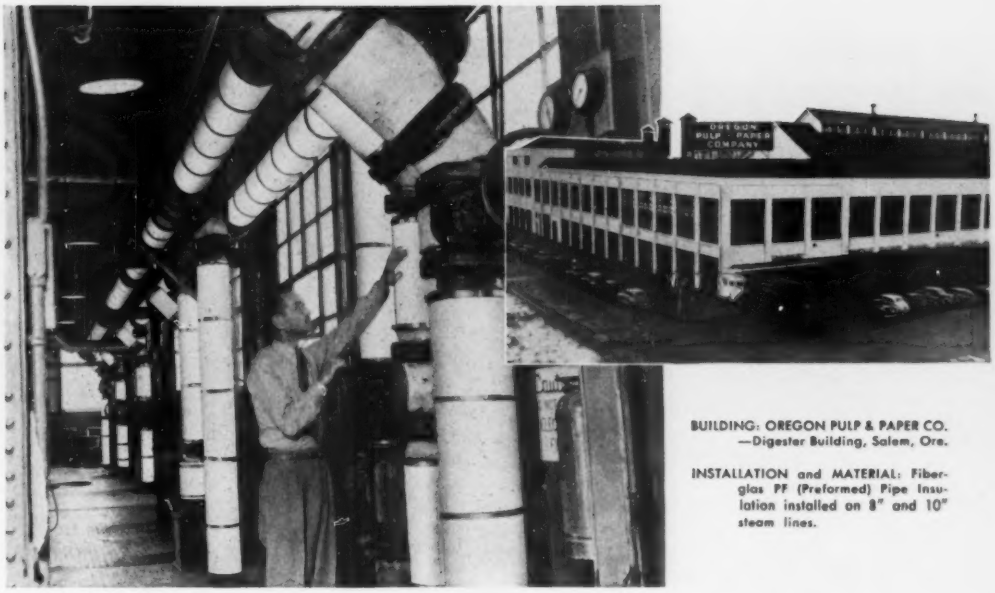
1. TRANSPARENCY—That property of paper which transmits light rays so that objects can be distinctly seen through the sheet.
2. SHIVES—A very small bundle of fibers that have not been separated completely in the pulping operation. They may appear in the finished sheet as an imperfection.
3. WRINKLES—Creases in paper produced during manufacture.
4. SLICE—That part of a Fourdrinier machine which regulates the flow of stock from the headbox onto the Fourdrinier wire.
5. DANDY—A skeleton roll, covered with wire cloth, riding on the wet web of paper of a Fourdrinier machine to aid in the formation of the sheet.
6. DUPLEX—A term which, when applied to a paper or board, may refer to texture, finish or color.
7. FIBER—The unit cell of vegetable growth which is many times longer than its diameter and which is the unit of paper pulps—sometimes divided into two classes, bast and wood fiber.
8. ADHESIVE—A substance that causes bodies to adhere to each other. In the paper industry bone, hide, and fish glue, gelatin starch and dextrin are the common adhesives.
9. CHIPS—Small pieces of wood produced by the chipper and used in digester for the manufacture of chemical wood pulp.
10. APRON—A sheet of metal above the breast roll which aids in conveying the stock onto the wire.
11. CRUSH—A defect in machine-made papers caused by excessive pressure or moisture at the dandy, couch or press rolls, characterized by a mottled or cloudy appearance.
12. DUCHESS——A size of note paper, 6x4¼ or 6⅛x4⅜ inches.
13. CURL—A defect in paper caused by two-sidedness in the sheet, leading to unequal shrinkage between the felt and wire sides when subjected to changes of atmosphere.
14. KNOTS—An imperfection in paper or lumps in paper stock resulting from incompletely defibered textile materials.
15. CUTTER—A machine for cutting paper into sheets of desired length.
16. DIGESTER—The pressure vessel in which pulpwood is cooked for the production of woodpulp.
17. BEATER—A machine consisting of a tank and containing a heavy roll revolving against a bedplate. Here pulp and other papermaking materials are suspended in water to mix and prepare them for forming on the paper machine into paper of the desired characteristics.
18. CLOTHING—Paper-machine felts and Fourdrinier wires.
19. UNBLEACHED—Pulp which has not been treated with bleaching agents.
20. JORDAN—A refining machine used principally for preparing stock that requires further refinement than is procured in the beaters.
21. APPEARANCE—The effect upon the sense of sight resulting from observation of the color, finish, cleanliness and formation of papers.
22. CLEANLINESS—A term indicating the freedom of the paper from impurities such as grit, dirt, fiber lumps, resin spots, etc.
23. FOURDRINIER—Name applied to the standard type of paper-machine. The Fourdrinier part is that portion of the machine containing the machine wire—usually termed the wet end.
24. DIAMOND—A term denoting imperfect but usable paper—seconds.
25. ERASABILITY—That property of a sheet which permits writing on the sheet to be removed by erasure and which resists erosion by erasure.
26. DOCTOR—A thin plate or scraper of wood, metal or other hard substance placed along the entire length of the roll or cylinder to keep it free from paper, pulp, size, etc., and thus maintain a smooth, clean surface.
27. FANNING—A method of sorting paper in the Finishing Room in which the sorter "fans" up the edges of the sheets on the pile and removes only those sheets which are damaged.
28. GUILLOTINE—An instrument, also known as a ream cutter or trimmer, for trimming paper.
29. RETENTION—The percentage of filler or other material added to the furnish in the beater which remains in the finished product.
30. FINISHING—The various operations in the manufacture and packaging of paper performed after it leaves the paper machine.

WANTED

Supervisor for pulp and paper research group of 6 to 8 men in laboratory of upper midwest mfgr. of bleached and unbleached groundwood, sulphite and kraft pulps and printing and converting papers. Must be a graduate chemist or chemical engineer well grounded in paper chemistry and manufacturing processes. Prefer man 35 to 45 years old with both production and development experience in above fields and a combination of a creative imagination with a practical approach to development problems. Paper coating experience desirable. In reply give personal history, training, experience and salary expected. Please reply to P&P Box No. 95, c/o PULP & PAPER, 71 Columbia St., Seattle 4, Wash.

WANTED

Young chemical engineer with some experience in pulp and paper manufacture for important research in pulping. Position may lead to new large industrial development. Give full details education, experience, personal data. Salary commensurate with experience. Please reply to P&P Box No. 98, c/o PULP & PAPER, 71 Columbia St., Seattle 4, Wash.



BUILDING: OREGON PULP & PAPER CO.
—Digester Building, Salem, Ore.

INSTALLATION and MATERIAL: Fiberglas PF (Preformed) Pipe Insulation installed on 8" and 10" steam lines.

FIBERGLAS* Pipe Insulations...

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In a wide range of applications throughout industry, including the pulp and paper industry, Fiberglas PF (Preformed) Pipe Insulations are keeping fuel and maintenance costs down. Consider their *unique* combination of fine performance qualities:

- **High insulating value**
- **Won't rot or decay**
- **Noncombustible**
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- **Non-corrosive**
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Savings in operation cost result from Fiberglas Pipe Insulation's high thermal efficiency. Thermal conductivity (k) equals 0.24 at 75°F. and permits fine temperature control with a minimum of fuel consumption.

Made of ageless fibers of glass, Fiberglas Pipe Insulation provides long-life protection and low maintenance cost. Durability, combined with its extreme light weight, also makes possible rapid, low-cost installation for outdoor and indoor applications.

In pipe sizes from ½" to 30" and forms suitable for low and high temperatures up to 600°F., Fiberglas PF Pipe Insulations are available through distributors and applicators located in every principal city throughout the ELEVEN WESTERN STATES.

For name of your local Fiberglas applicator or further information, phone the Fiberglas branch office nearest you, OR write to Owens-Corning Fiberglas Corporation, Dept. 112-I, P. O. Box 89, Santa Clara, California.

PACIFIC COAST DIVISION SALES OFFICES: Albuquerque, Denver, El Paso, Eugene, Fresno, Los Angeles, Phoenix, Portland, Sacramento, Salt Lake City, San Diego, San Francisco, San Jose, Seattle.

Pacific Coast Division of OWENS-CORNING FIBERGLAS SANTA CLARA, CALIFORNIA

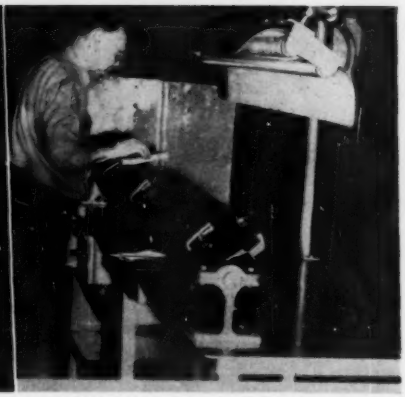
*Fiberglas is the trade-mark (Reg. U. S. Pat. Off.) of the Owens-Corning Fiberglas Corporation for a variety of products made of or with fibers of glass.

Manufacture of Chipper Knives

TYPICAL OF SERVICE INDUSTRY DEVELOPMENT

MOLTEN STEEL FROM HUGE LADLE is "teamed" into ingot mold. This is first step in operation for manufacture of chipper knife steel.

INGOT IS LIFTED FROM MOLD ready for delivery to forge for rolling into billets.



FINAL INSPECTION OF CHIPPER KNIFE is made after molding, rolling into billets and bars, machining, heat treating and grinding.

There is a great deal more to the making of pulp and paper and the great multiplicity of products from this industry than goes on in the plants of the pulp and paper companies themselves. This is a fact that is well known but perhaps too seldom considered.

Pulp and paper makers are often too busy with their own problems to delve into the story behind the tools and equipment they use. But they do know that suppliers have to carefully prepare and manufacture these tools and equipment.

Pumps, valves, screens, corrosion-resist linings, felts, wires, boilers, motors, filters—all furnished good examples of products engineered for the industry. Take chipper knives, for instance. Chipper knives, because they are a familiar, and apparently simple, part of the operation for the manufacture of pulp—and because their manufacture brings us close to the great steel industry, which is the key to the productive might of the country.

What's Behind a Chipper Knife?

Behind the manufacture of a chipper knife must be the knowledge of how to make steel—and how to make pulp. This fact was brought home to PULP & PAPER in a visit to the Heppenstall Company, Pittsburgh, Pa. To make this apparently simple piece of equipment requires a complete understanding of the pulp and paper industry on the part of the chipper knife fabricator.

Strange things emerge from the studies of chipper knife fabricators for the industry. They find: (1) That you can't make good pulp from sawdust; (2) That it is quite possible that a more uniform chip size cut with a minimum of bruising may save considerable time in later processes and improve quality; (3) That much damage done at the chipper can never be remedied later on; (4) That a sharp knife and a long-lasting knife is needed to furnish proper production; and (5) That someone must be in charge of the chipping operation who knows what kind of a chip will make the best pulp.

Steels now used in chipper knife production are the result of trial and error experience over a number of years. Heppenstall first came into this field in 1944 with pure alloy steel knives. Of twenty knife steels on the market, two are used for chippers—their highest quality alloys.

These are things to watch for in the chipping operation, the suppliers warn:

1. Watch for tramp iron on wood, and links from wood yard conveyors which may fall into chipper.
2. Maintain uniform bearing surfaces and see that knives fit into pockets. In mounting, be sure you have a good bearing surface, and bolts uniformly tightened.
3. Bed knife in the chipper should be changed frequently.
4. Knives should be changed as soon as they begin to appear dull. This eliminates bruised chips, lessens sharpening time, makes for less sawdust, power consumption and better uniformity of chips.
5. Keep feed spout full at all times. Single logs pound on the knives.
6. Maintain grinding procedure. Poor grinding can ruin knives and increase sawdust consumption.

Regular grinding procedures are put out by all chipper knife manufacturers, and need not be repeated here. But it is important to point out that all stress the fact that sharpness makes for better chips and lowers power consumption, and that uniform chips are the key to good pulp quality.

These are facts the manufacturers of chipper knives had to learn about the pulp and paper industry in order to make good knives. And, having learned this, they then had to go about using the knowledge of their own industry to make the steel to do the job.

Roughly and briefly, this process involves (see photos):

1. Melting the steel and pouring into ingots. This requires, first of all, a knowledge of alloys and what metals will do the best job in the manufacture of the knives. This is the "raw product" for the chipper knife.
2. Forging the ingots into billets.
3. Rolling the billets into bars.
4. Machining to working size of the part.
5. Heat treating to normalize, anneal, harden and temper the steel.
6. Inspecting before grinding to find any defects in the structure of the steel.
7. Grinding the part to final perfection.
8. Accurate test for hardness.
9. Inspecting for defects in the finished part.

As the pulp manufacturer must know his end product, so must the pulp supplier know his. It is to serve the common ends of both that PULP & PAPER has gone "behind the scenes" with this article.

Book On Important Pulp and Paper Mill City

The story of Port Angeles, Wash., site of three pulp and paper mills, is told in a fascinating book written by Thomas T. Aldwell, 82-year-old pioneer resident, who himself envisaged future development of its timber wealth and water power when he arrived here in 1890, and has had a leading part in that development.

The book is entitled "Conquering the Last Frontier," and is as much a personal history as a story of the little city which now has a 15,000 population, with Rayonier, Fibreboard and Crown Zellerbach mills as principal industries.

Mr. Aldwell is father-in-law of Dr. Arthur Parrett, Rayonier's research director.

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Flash Roasters

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SO_2 from

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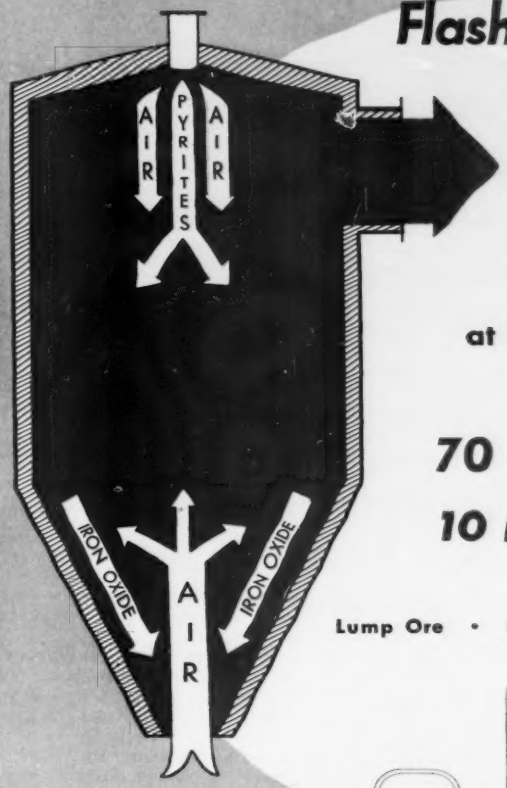
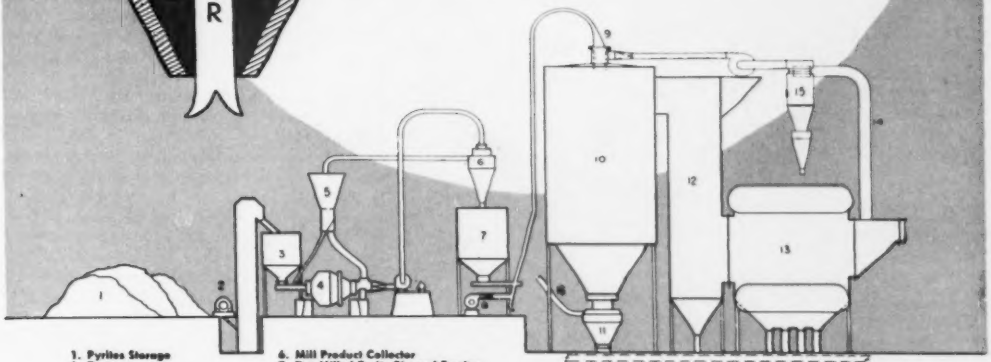
70 Flash Roasters in

10 Industrial Countries



Lump Ore • Flotation Concentrate • Fine Ore



1. Pyrites Storage
2. Dryer
3. Mill Feed Bin
4. Ball Mill
5. Classifier
6. Mill Product Collector
7. Dry Milled Pyrite Bin and Feeder
8. Top Air Fan
9. Air-Pyrites Pipe and Burner
10. Nichols Freeman Flash Roaster
11. Calcine Hopper
12. Hot Gas Flue
13. Waste Heat Boiler
14. Recycled Gas Line
15. Dust Collector
16. Bottom Air Inlet
17. Calcine Conveyor

NICHOLS ENGINEERING & RESEARCH CORP.

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food for thought...

CAUSES OF FOREST FIRES

1. Fires caused by careless smokers...	19.8%
2. Fires caused by careless debris	18.7%
3. Fires caused by careless campers...	4.7%
4. Fires caused by incendiaries	30.3%
5. Fires caused by lightning.....	9.3%
6. Miscellaneous causes.....	17.2%

Protection of forests from fire is by far the biggest job in the vast new Tree Farming program taking root across the nation.

Hundreds of acres of trees can be destroyed in an hour by uncontrolled fire; and in the Pacific Northwest, for example, it takes about 80 years to grow a new crop of trees. Also, fire usually destroys all the trees in its path leaving no seed trees to replant the burned over area. This means months of work in planting thousands of seedlings by hand.

Weyerhaeuser loggers help out in fire prevention by controlled burning of slash in newly logged areas, as required by state law. Lookout stations and fire roads aid our fire-fighting crews and equipment. Cooperative fire-fighting and prevention methods have been worked out with other private companies and government agencies.

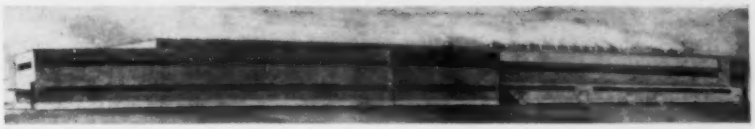
You, the public, can help the 2,980 Tree Farmers throughout the country by being more careful with fire in or near forest areas—and by reporting fires promptly. *Everybody* loses when a forest burns... locally and nationally, suppliers *and* users of lumber, woodpulp and other forest products.

WEYERHAEUSER

Hummel-Ross Expands

TO HAVE BIG 270-INCH FOURDRINIER

E. H. GRAVES, Plant Manager of Hummel-Ross who directs new construction and operations.



ARTIST'S CONCEPTION of plant after completion. Preliminary work has begun; the plant is expected to be in operation early in 1953.

Construction is well under way at the Hummel-Ross Division, Continental Can Co., Hopewell, Va., on $7,350,000 expansion and modernization program which will include what is said to be the largest, or one of the largest, Fourdrinier paper machines ever built in this country. The machine is expected to be delivered in 1953.

The machine, which holds the key spot in the expansion program, is being built by Bagley & Sewall Co., Watertown, N.Y., and will have a wire width of 270 inches, trim, 250. The machine will be 580 feet long and will operate at a maximum speed of 1500 fpm.

To accommodate the building for the new machine, it has been necessary to move a railroad siding and clear the ground west of the present plant. The new building will be 860 by 83 feet and 50 feet high, with a basement with depth 18½ feet.

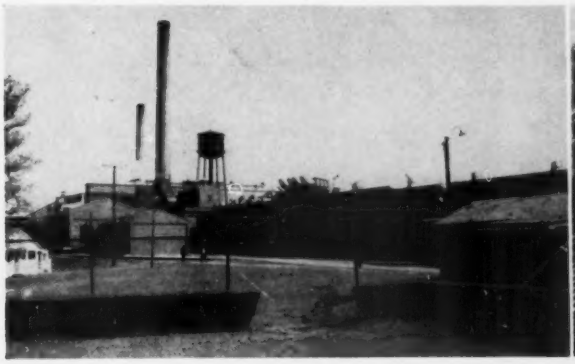
It was expected all equipment would be purchased by September. J. E. Sirrine & Co., Greenville, S.C., are consulting engineers operating with Hummel-Ross personnel in handling full details of construction and equipment. H. M. Vernon is plant engineer.

According to the woodlands department chief, Archie L. Wenrich, present mill consumption of pine for high grade kraft pulp is approximately 750 cords per day. Most of this is obtained in Virginia and North Carolina, with shipments by rail, water and truck.

Continental Can Co. acquired the Hopewell plant in March, 1947. E. H. Graves, plant manager, points out the expansion is part of a program which has had as its objective a modern, progressive plant for production of high quality paperboard for fiber drum shipping containers.

The Hopewell plant was founded by J. P. Hummel in 1922, when construction began on the site of an old Dupont munitions plant from World War I. It went into production in 1923 producing paperboard at the rate of 40 tons per day. Present capacity is said to be 400 tons per day, and some 600 are on the payroll.

CURRENT VIEW OF HUMMEL-ROSS DIVISION plant of Continental Can Co., Hopewell, Va., prior to beginning of construction of new plant. Bagley and Sewall Co. is building machine with wire width of 270 inches.



VIEW OF WOOD YARD at Hummel-Ross. Present plant used some 750 cords of pulpwood a day under present operations. Addition of new machine will put to full use the pulp capacity of the plant.—Photos courtesy HOPEWELL NEWS.

ROBERT AND COMPANY ASSOCIATES

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HAROLD R. MURDOCK, *Chemical Engineer*

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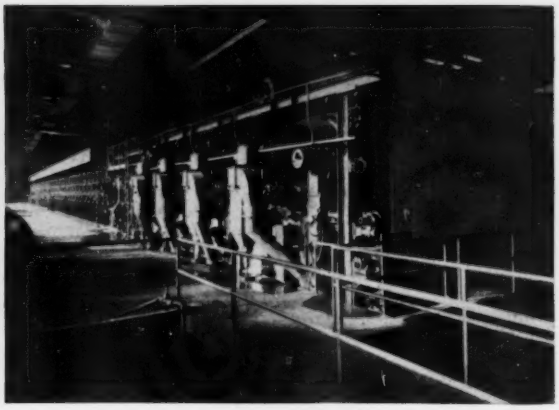


AIR VIEW (left) OF ALTON BOX BOARD CO. on the Mississippi just above the point where the Missouri joins it. Mill built for the big No. 4 Machine is at upper right. Purchased pulp is under roofs in foreground and straw and waste paper is piled elsewhere. At right: ALTON BOX BOARD'S No. 3 Beloit cylinder machine, 169 in. face on cylinder mould. World's biggest strawboard producer.

STOCK FORMATION, by H. F. Hollis

(Continued from Page 38)

that we have defined that we mean by formation the process to include couching, it is necessary to bring felts into the picture.

a. Can the type of felt in terms known to the trade such as "basket weave," "pulp," etc., affect the running conditions of the machine?

b. Can a bottom felt be made up the same whether or not the cylinder mould spindle is driven by helper motor?

c. Can the type of felt affect the water release ahead of the couch in terms of troubles such as crush, etc., in such a way that the water levels in the vat, or the heads, will have to be manipulated because of the felt and not because of other conditions?

d. Can it now be said that the mechanism of stock formation on the cylinder may be considered independent of the felts, or is it not somewhat dependent on the type of felt?

10. *Mould Spindle Booster Motors.*

It has become rather common practice to install booster motors on the cylinder mould spindles. The main reason perhaps is to relieve the felt from acting as a transmission belt so it can perform its function of picking up the sheet under conditions outlined in Item (9) to better advantage.

a. On a given machine should each and every cylinder mould be equipped with a motor or should every other one or every third one be so equipped? Why?

b. If it be decided that each spindle should not be equipped with a motor, what should be the first cylinder to be equipped with a motor, No. 1 Cylinder or No. 2 cylinder?

c. Can there be any real reason for not equipping all cylinders? Has anyone had the experience of losing a cylinder drive by gear, bearing or motor failure? Even though the coupling was disconnected what were the resulting problems with this helper out of commission?

d. How does the torque or input horsepower to the cylinder mould spindle vary with the machine speed? Is it a straight-line relationship or does the torque or input horsepower more rapidly increase as speeds go up?

e. On higher speed machines equipped with helper motors, where couch roll nip pressures are oftentimes high and where the couch rubber is reasonably soft, what is the effect of the wide nip on spindle input horsepower, couching action, water release and the resultant condition of the formed sheet itself?

f. Which type of cylinder mould seemingly calls for a booster motor; the old-fashioned multi-spoke design or the newer streamlined fewer-spoke design? What do you think is actually true in present practice?

11. *Vat Temperatures.*

In years gone by we have heard many and varied stories regarding the proper temperature for the vat. In most mills the only way vat temperatures may be raised is via the dirty water heater, and an arrangement of the water circuits to provide a fairly closed system.

a. Which is the better temperature for operating a normal paperboard machine so far as stock formation is concerned, ranging from plain chip grades through test liners, 80-deg. F. or 140-deg. F.?

b. Where is the slurry of stock more fluid, ranging in densities from 0.4% through 10%, at low temperature or high temperature? (By more fluid we mean the phenomena of apparent viscosity, pipeline friction and apparent freeness in the vat itself.)

c. What is the temperature limit for successful operation of the vat considering the effects on felts?

d. What is the temperature limit in the vat considering the effect on sizing? In other words, should sized board be run at low temperature or can it be run at high temperature?

e. What is the effect of temperature on the vat in the matter of water release through the felt ahead of the couch, etc.?

f. What is the effect of vat temperature, high or low, on the sometimes troublesome phenomena of "bundles" and their effect on formation?

g. Is there much gain or any gain in running higher vat temperatures on the drying rate of the machine? In other words, does a high vat temperature automatically insure the drying of more paper, other conditions being the same?

h. If it be desired to raise vat temperatures from a present level to a higher one where and what would be the arrangement for doing so? In other words, would a steam-jacketed vat be a better proposition than the heating of the white water for the breaker beater?

12. *Stock Characteristics vs. Formation.*

This phase of the subject is in reality a major consideration all of its own. Everyone realizes that the method of handling the stock from the waste bale to the inlet of the vat has a tremendous influence on the mechanism of stock formation.

a. In preparing compound mixtures for a mixed sheet is it sensible to beat off and refine together such types of stocks as news, corrugated and virgin kraft pulp directly together, or should they be separately beaten, prepared and mixed in at least a semi-refined state and then mixed at a later stage in the process?

b. Is it possible to ever over-hydrate a stock at any stage in the preparation process? What would be its effect, if possible, on formation?

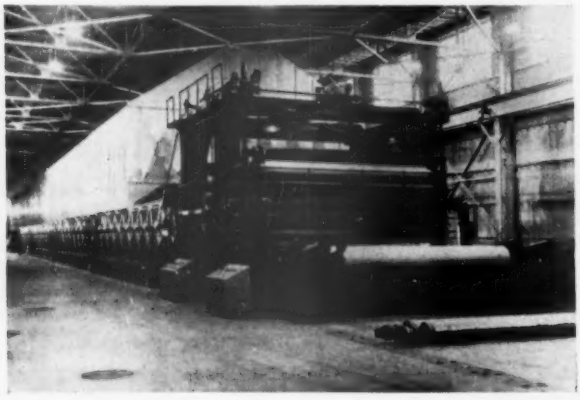
c. This subject is so manifold it is thought best not to outline any further as it is believed there is more general knowledge on this particular phase of the business than any other.

13. *Vat White Water System.*

There are many different arrangements on handling the vat white water system, variations being required because of the vat arrangement itself, etc. There are a few factors that can be explored which have their effects on most types of vats.

a. Should the incoming stock from the head box be mixed with the discharge of the fan pump between the pump and the vat or should this stock be directed to the suction side of the fan pump system? Why, in either case?

b. What is the effect on formation where fan pumps have very little hydraulic suction head thus causing a tendency to air-lock and surge therefore. What is the real remedy, to place the pumps in a sensible position according to good pumping practice or to further clutter up the vat and the piping system with jim-cracks?



HERE'S DRY END OF WORLD-FAMED ALTONIAN—big No. 4 at Alton Box Board, a 216-inch cylinder machine made by Beloit. It has seven cylinder moulds, each weighing 22,000 pounds, and 5-ft. diameter, of suction type. Dry end has 4 sections; total of 76 paper dryers, 9 felt dryers.

Nothing Stumps The TD-14A

ONE PUSH DOES IT for the big ones—the TD-14A has the extra power to doze out big pine stumps with a single pass.

Read how International crawlers put the profit in stump removal operations for Robert Tolar

There's money in pine stumps—when you can deliver them to a refinery that distills them into useful products the way Robert Tolar does near Columbia, Mississippi.

And International's TD-14A is the tractor to make money in stumping. Mr. Tolar says: "I watched my TD-14A working its first day and decided that here was the tractor we stumpers had been waiting for. I placed an order for another one right away.

"The TD-14A has the extra power to get out the big stumps with a single push, yet is faster and more maneuverable than any other tractor in its class. And when we move from one job to the next, it loads quickly—we don't need a special permit to travel hard-surfaced roads."

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ROBERT TOLAR'S TD-14As doze out 75 tons of pine stumps a day for hauling to refinery. His trucks are Internationals, too.

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Use

BSM-11 or BUTROL AS PART OF Good HOUSEKEEPING PRACTICE

SLIME CONTROL
WITH ONE PROVEN PRODUCT

Pacific Coast Supply Company
PORTLAND, OREGON - SAN FRANCISCO, CALIFORNIA

HOLLIS ARTICLE

(Continued from Page 104)

c. Which is the best fan pump drive? The constant-speed drive wherein by throttling, steady flow conditions be maintained? Or, should the pumps be variable-speed-driven where the head-capacity characteristics exactly match the hydraulic system characteristics? Does anyone understand why this latter system may have some serious faults and seriously affect formation, and why?

d. Which is proper, to have the stock absolutely air-free or simply deaerated to a place where large globs of air are absent or have been dissipated ahead of the stock inlet? What is the effect of large globs of air on formation?

e. Which provides the most trouble-free white water system and has the least deleterious effect on formation, a large type slow-speed fan pump and piping or small caliber piping high-speed fan pump? Why in both cases?

f. When installing a new machine or when rectifying an existing one, should any consideration be given to elimination of elbows, air pockets and sand traps or are these piping arrangements of no practical effect on formation?

14. *Mould End Seal.*

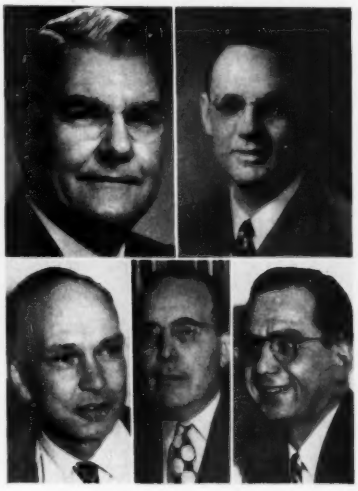
Many attempts have been made to provide satisfactory maintenance-free water-tight cylinder mould end-seals. Most designs accommodate only the submerged portion of the mould and a few provide a complete circle of sealing.

a. What is the effect of a leaking garter or seal on stock formation on that particular end of the cylinder? What would be the effect on the central zone and on the far side, if any?

b. If cylinder mould be sealed a complete circle permitting the use of an induction fan to exhaust the area above the water level, would there be any resultant gain in the qualities of stock formation and are there any other advantages to such a system? In other words, what is the decision in regard to the type of seal; should it be partial or complete?

c. Assuming that the normal angular type chime permits the felt to wrap this portion of the cylinder mould during operation thus causing abnormal felt wear on the edges, would it be an advantage to have a seal so designed to permit an extension of the mould in the form of a slightly curved shelf to make the felt lie flat throughout its running life?

d. What is the difference between a good designed seal and a poor one in terms of torque or cylinder spindle input horsepower? If the seal be one causing high friction and if the particular mould in question not be provided with a booster motor, can it be considered true that the sheet in its final formation stages going under the couch would suffer some damage?



THOMAS F. GLEED (top-left), Seattle First National Bank President, who has been appointed President of the 56-year-old Simpson Logging Co., which, besides having extensive logging, lumber and plywood operations in the Far West, also operates an insulating board plant at Shelton, Wash., and is considering further steps for wood fiber utilization. WILLIAM G. REED (top-right), principal owner of Simpson, will continue as Board Chairman, a position he had held with the Presidency. He recently resigned as Executive V. P. of Rayonier. Lower row (l. to r.): C. E. DEVLIN, Sales Manager, made a V. P. of Simpson; H. O. PUHN, Logging Manager in Washington state, promoted to General Manager of Shelton "Working Circle" (integrated operations); and C. H. BACON, former manager of Shelton Circle, now V. P.-Operations (supervising all Washington and California production).

Wisconsin Corrosion Engineers Are Organized

A new section of the National Association of Corrosion Engineers to serve the extensive paper and power industries of Central Wisconsin was organized May 7 at a Milwaukee meeting at Milwaukee. This is the twenty-third local section formed by the association. The next nearest local organization is at Chicago. Of 40 attending, some drove 100 miles to be present. The new Wisconsin Section's secretary is Harold F. Haase, Engineering College, Marquette University, Milwaukee, Wis. The meeting was addressed by Orin Andrus, of A. O. Smith Corp. on "Fundamentals of Corrosion."

TITAN Tops on the Job!

Photographs taken at Harbor Plywood Corporation's logging show near National, Wash.

New Series 60 ADDING FAME TO TITAN NAME

There's just one true test of a power chain saw—how does it perform on the job, under pressure, when there are tough production schedules to be met, day after day. Leading logging operators have long agreed—TITAN is tops on the job. And TITAN'S reputation for tireless performance is growing as more and more loggers use the new TITAN Series 60—the lightweight saw with the power punch. Use the TITAN Series 60 as a one-man or two-man saw. It weighs only 37 pounds complete with 26-inch bar and chain—delivers power to spare for a 5-foot bar—is available with straight blade bars from 26 to 60 inches or 19-inch capacity bow saw. It's a pleasure to see the TITAN Series 60 tackle any job in the woods—fell trees, buck, limb, cross-cut, rip, square timbers. It's a pleasure to feel how easily this saw handles, how fast and smoothly it operates. Try the new TITAN Series 60 and you'll agree—here's another TITAN that's tops on the job.

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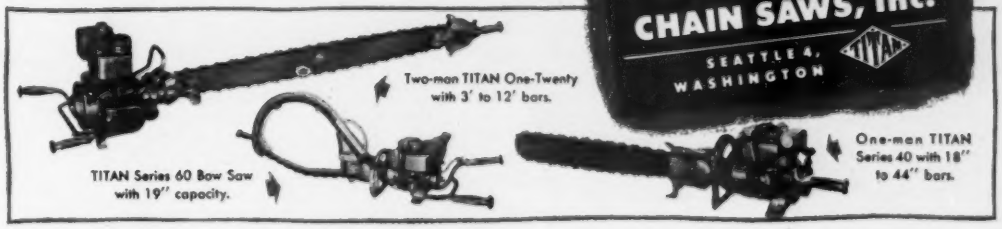
• Ask your dealer for a TITAN demonstration today.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CHAIN SAWS, Inc.
SEATTLE 4, WASHINGTON
Two-man TITAN One-Twenty with 3' to 12' bars.
TITAN Series 60 Bow Saw with 19" capacity.
One-man TITAN Series 40 with 18" to 44" bars.

Certificates of Necessity Granted Industry by NPA

Cerificates of Necessity granted the pulp and paper industry by NPA since previous listings in PULP & PAPER (August issue, page 44) and World Review Number (complete previous listings, page 176), include the following:

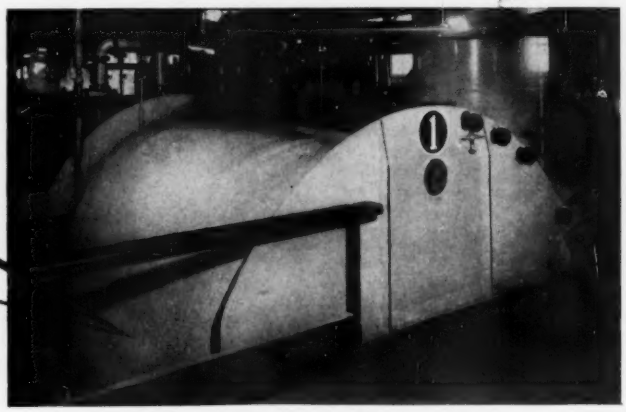
Company	*Product*	*Amt. Certified*
Champion Paper & Fibre Co., Hamilton, O.	Bond papers	$ 43,500
Coronado Mfg. Co., Pryor, Okla.	Liner board	$ 3,120,600
Cornell Wood Products Co., Milwaukee, Wis	Paperboard	$ 817,456
The Beckett Paper Co., Hamilton, O.	Papers	$ 173,150
Champion Paper & Fibre Co., Canton, N.C	Bleached chem. pulp	$ 1,047,710
Hudson Pulp & Paper Corp., Palatka, Fla	Kraft paper	$ 9,000,000
Brown Paper Mill Co., W. Monroe, La.	Kraft paper	$ 3,160,000
Hopper Paper Co., Taylorville, Ill.	Fine paper	$ 1,500,000
St. Regis Paper Co., Pensacola, Fla.	Wood pulp	$12,161,000
Sangamon Paper Mills, Inc., Katon, Ind.	Paperboard	$ 380,000
Champion Paper & Fibre Co., Pasadena, Texas	Paperboard	$ 45,300
S. D. Warren Co., Cumberland Mills, Maine	Pine pulp	$ 3,612,000
Cornell Paperboard Products Co., Milwaukee	Paperboard	$ 817,456
Beckett Paper Co., Hamilton, Ohio	Papers	$ 173,150

A few of the projects are near completion or already well under way.

Snapped by a PULP & PAPER field editor at official opening of the new San Francisco offices, shop and warehouse of the DeLaval Steam Turbine Co., 160 Folsom St. Left to right—Charles A. Jurgensen, Vice President in charge of Manufacturing; James P. Stewart, President; and Carroll F. Reeves, Pacific Coast Manager. Mr. Stewart and Mr. Jurgensen were recently promoted to their new positions by board of directors' election.

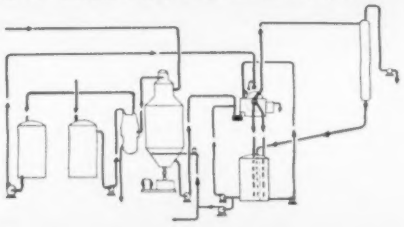
This HIGH-CONSISTENCY PULP SHEET

means cleaner-washed pulp, with more solids in the liquor system



A single Swenson-Nyman drum provides 2-stage washing. Many installations are 1-drum 2-stage operations (as in flow sheet below); and others are 2-drum 4-stage, or 3-drum 5-stage systems.

Typical Swenson-Nyman Pulp Washer operations show discharges ranging from 16% to 23% BD, depending on the type of pulp. Such astounding results come from multi-stage operation and scientific design. Ask for Bulletin E-108.



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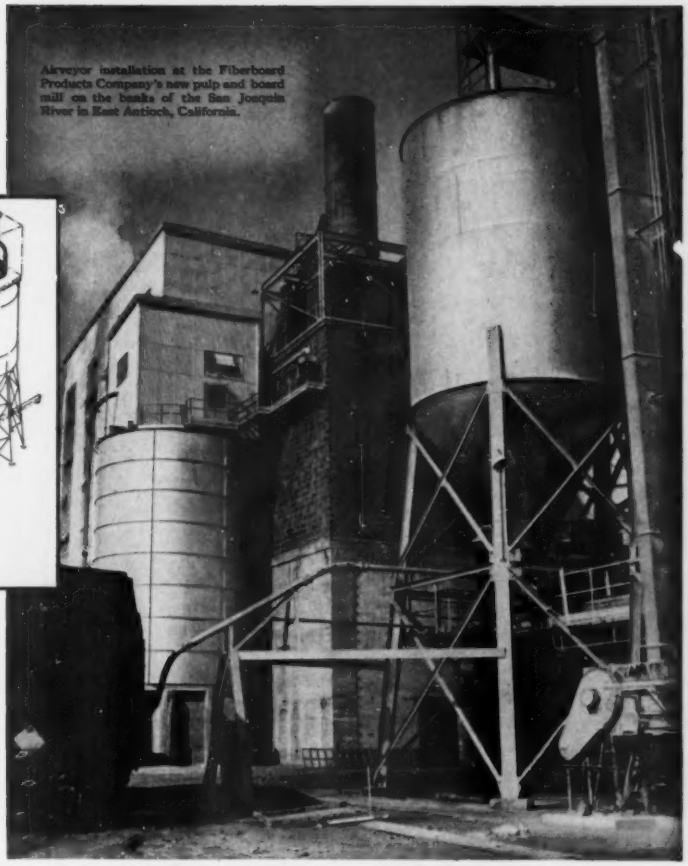
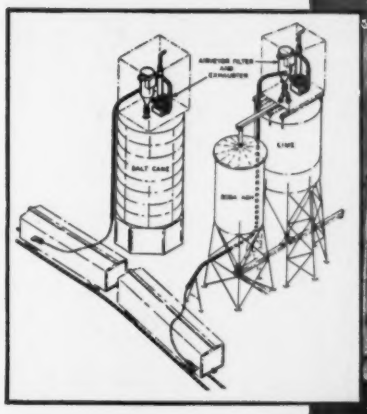


Airveyor installation at the Fiberboard Products Company's new pulp and board mill on the banks of the San Joquin River in East Antioch, California.



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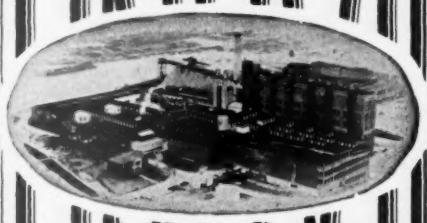

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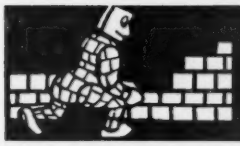

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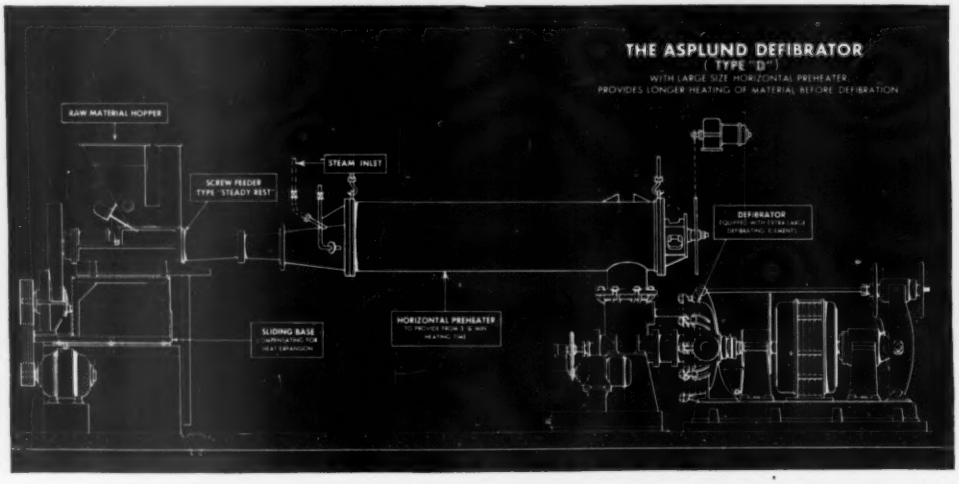

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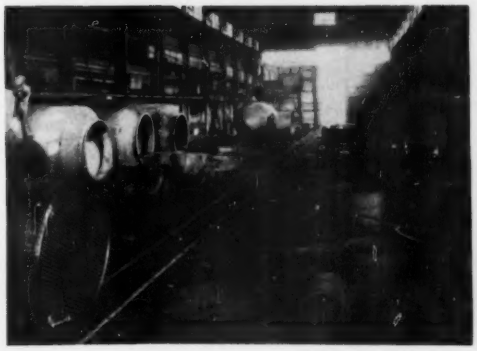

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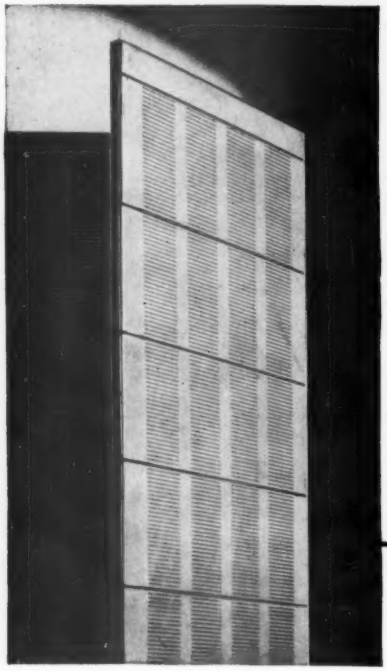

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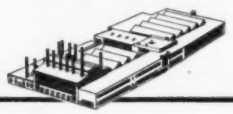

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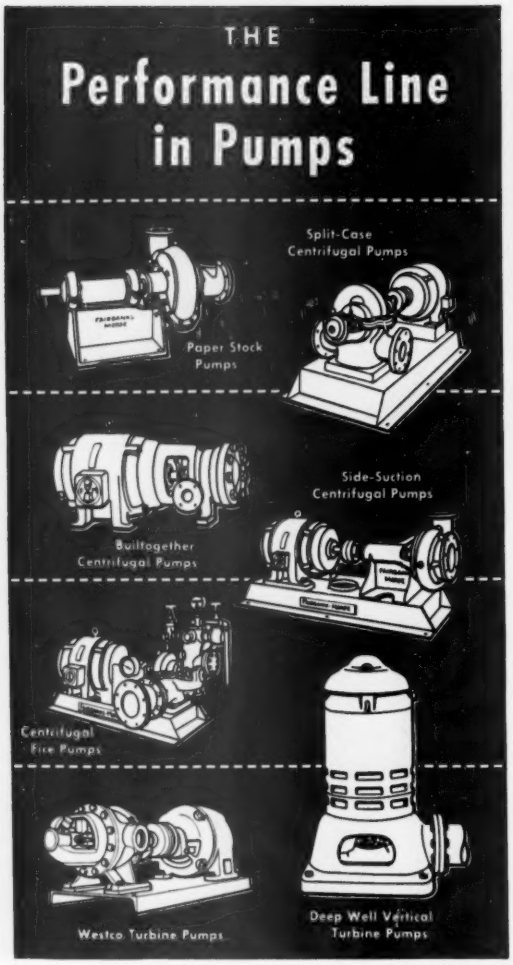

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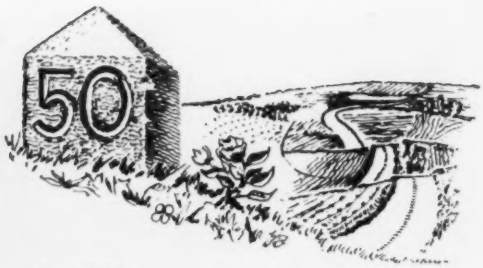

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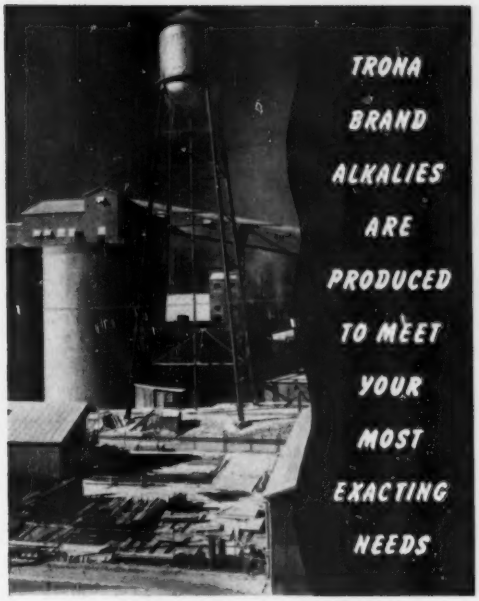

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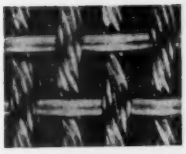

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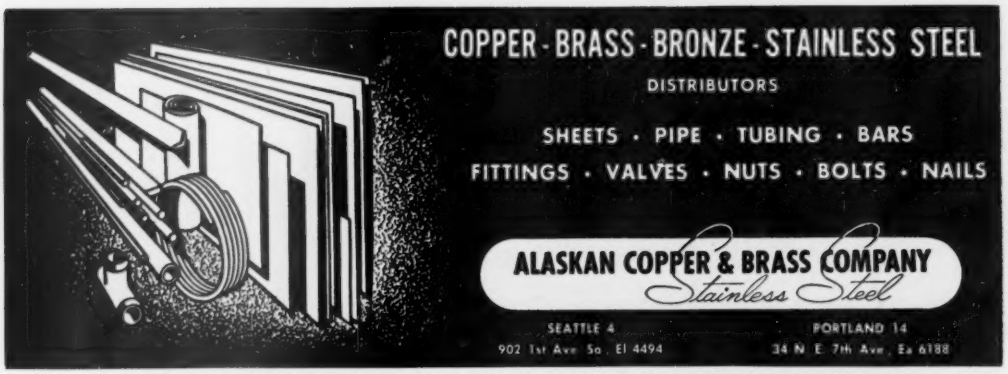

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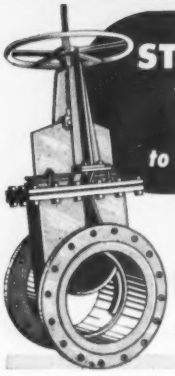

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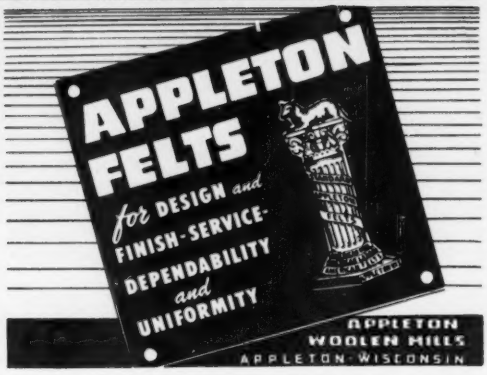

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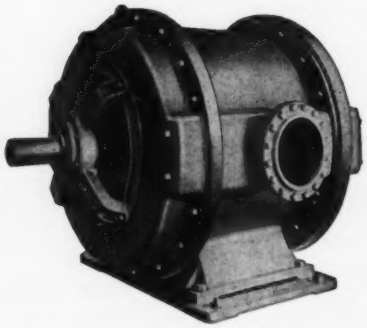

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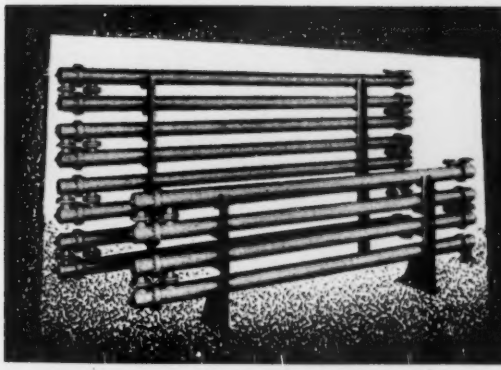

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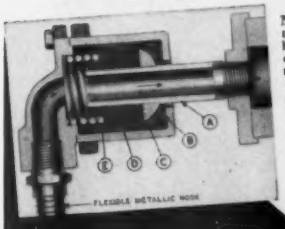

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